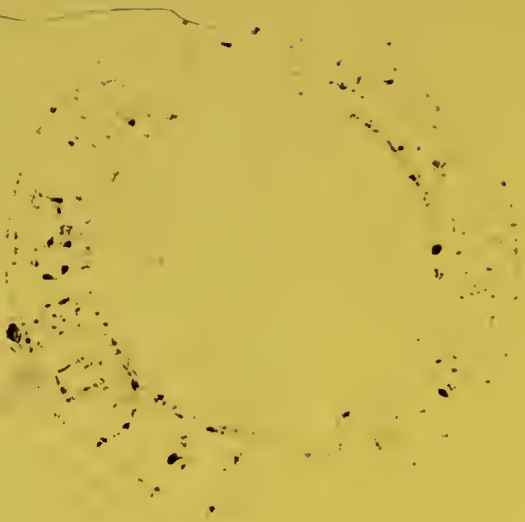


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CHILDS, G.B.

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ON THE

IMPROVEMENT AND PRESERVATION

OF THE

Female Figure:

WITH

A NEW MODE OF TREATMENT

OF

LATERAL CURVATURE OF THE SPINE.

BY G. BORLASE CHILDS, ESQ.,

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AUTHOR OF

"A PRACTICAL TREATISE ON A NEW OPERATION FOR DEFORMITIES OF THE SPINE."

LONDON:

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TO

WILLIAM COULSON, Esq.,

AUTHOR OF A WORK ON DEFORMITIES OF THE CHEST AND
SPINE, ETC.

THE FOLLOWING PAGES

ARE INSCRIBED,

AS A MARK OF RESPECT FOR HIS GREAT
PROFESSIONAL TALENTS,

AND AS A SLIGHT ACKNOWLEDGMENT OF THE MANY
KIND SERVICES RENDERED

TO HIS OBLIGED AND FAITHFUL

FRIEND AND SERVANT,

G. B. CHILDS.

P R E F A C E.

MY object in the following pages has been to direct the attention of parents, and those conducting public seminaries, to an early consideration of the causes which tend most materially to injure the health of the young, and lay the foundation of spinal deformities, as well as to advise and point out the means best adapted for their removal when these complaints occur.

Open as these observations now are to criticism, I trust, should they be deemed worthy of notice, some protection may be afforded them from a remembrance, that, in the accomplishment of my object, I have discarded all technical language, and endeavoured to reduce my observations to the perception and judgment of the general reader.

Spinal deformity being a subject fraught with so much importance to the fair sex, both as regards their health and happiness, has induced me to pursue this course.

If, in the following pages, I succeed in directing their serious consideration to many of those practices which exert so baneful an influence over both their moral and physical condition, I shall consider myself more than amply paid for the labour bestowed.

I forbear making any remarks on my own writings; I submit them to the judgment of a discerning and indulgent public, and shall meekly bow to its decision.

“ Go, little book ! from this my solitude,
I cast thee on the waters—go thy ways !
And if, as I believe, thy vein be good,
The world will find thee after many days.”

70, *Upper Stamford Street,*
Blackfriars Road.

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“ ——— New customs,
Though they be never so ridiculous,
Nay, let them be unmanly, yet are follow'd.”

HENRY VIII.

ON
LATERAL CURVATURE
OF
THE SPINE.

SECTION I.

Preliminary Observations on the Bony Fabric of the Human Body.—Division of the Skeleton into Trunk and Extremities.—Subdivision of the Trunk into Middle and Two Extremities.—Description of the Vertebral Canal;—its Use.—Intervertebral Substance;—its Use.—Division of the Vertebral Column into three Regions.—Description of a Vertebra.—Length of Vertebral Column;—Importance of its Functions.

THE hard parts of the body, taken collectively, bear the name of skeleton. Almost all animals have a skeleton; but it does not exhibit the same arrangement in each. Of whatever nature it be, its object is to sustain the other organs. It forms the steady foundation on which is erected

the whole edifice of the living machine; constituting a solid frame-work, whose various parts, connected by flexible ligaments, are at once capable of moving on each other, and of resisting the effects of a foreign motion. It is on it that the general form of the body depends, as well as that of its various parts; and it is by it that its proportions, figure, solidity, and principal divisions, are determined. In man the skeleton is divided into trunk and extremities.

The trunk is subdivided into a middle part and two extremities; the upper one of which is the head and face, and the lower the pelvis. The middle part is formed by the vertebral column and chest.

The vertebral canal is a bony cavity, situated and running along the posterior and middle part of the trunk, formed by the junction of twenty-four bones, called *vertebræ*, piled on each other, and united and kept in their respective situations by bands of ligamentous cords, which limit their motion, and assist in preventing displacement.

Between the articulating surfaces of each ver-

tebra is placed an elastic, fibro-cartilaginous, or gristly substance, acting as a sort of cushion, which yielding to pressure, recovers its form, thus favouring the extent of motion, and also assists in preventing displacement. These vertebræ, cartilages, &c., taken collectively, form what is familiarly called the *back-bone*.

The vertebral column is divided into three regions,—the cervical, dorsal, and lumbar. In the cervical region are contained seven vertebræ; in the dorsal region, twelve vertebræ; and in the lumbar region, five vertebræ.

The external conformation of the body is symmetrical. A vertical line drawn through the middle of the body, which may be supposed to pass through the centre of the head, and terminate at the feet, divides the body into two similar halves. This imaginary line is called the *vertical mesial line* of the body, and is used by anatomists for the purpose of more accurately describing the relative positions of different organs and regions.

In every vertebra there are distinguished a body, seven processes, four notches, and a hole.

The body occupies the middle and anterior part. It is thick and broad, and adapted to the fibro-cartilage already mentioned interposed between each vertebra. It forms part of the vertebral foramen or canal behind, and presents several distinct apertures for blood-vessels.

The seven processes of each vertebra are, the spinous, which projects from the front and centre of the body; the two transverse, which project on either side, and give attachments to muscles; and the four articular processes, two above and two below, which articulate the vertebræ with each other.

The different processes of each vertebra are united in such a manner as to form an arch of the posterior and lateral part of the vertebra. This arch is joined to the body by a pedicle, on which are scooped out, above and below, the notches already mentioned, and which, when the vertebræ are applied one upon another, form the intervertebral foramina, and give transmission to the nerves.

The hole, or foramen, for the medulla, or spinal

marrow, is oval or triangular, and concurs to form the canal; it is placed between the bodies and the processes.

This canal extends along the whole length of the spine, following its various curvatures, and is placed nearer its posterior than its anterior part. Above it is continuous with the cavity of the skull, below with the sacral canal; it is wide in the neck and upper part of the back; it then contracts, to be again enlarged at the loins.

I have already said, that twenty-four vertebræ united constitute the vertebral column; the length of which is nearly the same in all individuals, unless when it happens to be distorted, either from the malformation we are about to treat of, or some other cause. In general it is about the third of the whole length of the body; and the more ordinary dimensions of its different regions are, about five inches the cervical, eleven the dorsal, and seven the lumbar. It increases in thickness from above downwards, so as to represent a pyramid with its base below; but this increase of thickness is not perfectly graduated.

The spinal column naturally represents a curve in three different directions. Anteriorly it is convex along the neck, concave at the back, and again convex at the loins. These three curvatures are so disposed, that a vertical line passing through the centre and base of the vertebral column will pass before the bodies of the dorsal vertebræ, and behind those of the cervical and lumbar.

In the healthy state, the vertebral column inclines to neither side, but occupies precisely the mesial line of the back, so that a line drawn from either vertebra to a given point on the shoulder would be equidistant with a similar line drawn to the opposite side.

The bodies of all the vertebræ are cellular, or spongy, so that with solidity and flexibility it combines lightness. The superior extremities, the soft parts of the neck, and viscera of the thorax, the greater part of those contained in the abdomen, are supported by the vertebral column, the weight of which it transmits to the pelvis.

On account of the weight of these parts, it was requisite the vertebral column should present great

solidity. If we reflect, then, that the spinal column is composed of superincumbent cylindrical portions,—that it has the form of a pyramid with its base below,—that it presents three curves in opposite directions, which give it sixteen times more resistance than if it had no curve, we shall form some idea of its resisting power. Moreover, the weight of the organs which the vertebral column sustains is felt particularly upon its anterior parts; therefore to resist the tendency it has to bend forward, nature has placed a number of strong muscles behind.

The motions of the vertebral column are intended chiefly to favour those of the superior and inferior extremities, and to render less fatiguing the different attitudes and positions of the whole body. It takes place in all directions—flexion, extension, lateral inclination, and rotation.

Independent of these, the spinal column performs other most important functions. It lodges the spinal marrow, forming a bony enclosure around it, and protecting it from all external

violence and injury; gives passage to all the spinal nerves and vessels; and last, though not least, forms a firm attachment to numerous muscles and ligaments, through the medium of which the various motions of the trunk are performed.



1st Stage.



2nd Stage



3rd Stage.

SECTION II.

Symptoms of Lateral Curvature.—Division into Three Stages.—Description of each.—State of the Right Shoulder.—Peculiarity about the Waist.—Projection of the Ribs.—Projection of the Chest.—Double Curvature.—Pelvis twisted.—Depression of the Left Shoulder.—Projection of the Hip.—Left Side contracted.—Awkwardness of Gait.—Deranged Functions of the Heart and Lungs.—Constitutional Symptoms.—Projection of the Shoulder not always a direct consequence of Lateral Curvature.

It is only during the most poignant feelings of grief, the innermost recesses of man's heart are laid open; it is only during the moments of affliction and sorrow, man's perfections and imperfections are truly developed.

A constant succession of misfortunes and a daily perception of their cause, exercise a most powerful and lasting influence over the character of man, and, like some untoward circumstance in earlier life, produce an imperceptible, but gradual and effective, change over his future career.

On a truly sensitive mind no misfortune exerts a more humiliating influence than a consciousness of deformity and a knowledge of personal defect. Under the influence of these feelings, Byron, even from his earliest youth, became a prey to the most misanthropic and morose disposition, and the simple circumstance of a twisted foot cast many a bitter and remorseless pang over his happiest moments.

Of all the maladies incidental to growing children, none have greater claims on our interest, nor deserve more our peculiar attention, than those which affect and destroy the beauty and symmetry of the human figure.

Not only do the constitutions of children suffer, but their future happiness is at stake, and the changes which take place, if unheeded, are sufficient to embitter every moment of their existence, and to them life itself will be but a thankless boon.

What are the pleasures of life, when alloyed with the consciousness of deformity? What, the hopes of happiness, the pleasures of society, when we continually become the objects of its pity and

commiseration, when every look and word, every whisper and jeer, our conscience declares, is directed at us.

Lateral curvature, of late years, is of such frequent occurrence, that, comparatively speaking, there is scarcely a female in the upper or lower circles who has not become a victim to its attack.

The symptoms of lateral curvature may be divided into three stages; but so imperceptibly do they pass one into another, that we are prevented from making any distinct line of demarcation between them.

The first stage commences with a sensation of weakness along the course of the back, and an inability to keep the spine erect, which is more perceptible towards night. As it progresses, this feeling becomes more and more distressing, until at length the patient has the greatest difficulty to preserve the spinal muscles in a state of contraction longer than a few minutes.

In very young children these symptoms are not so marked, and frequently the only indication of the disease is the existence of the deformity itself.

As the disease advances, an unusual degree of fullness will be perceived along the back and right side of the neck; the right shoulder will have an enlarged, rounded, and elevated appearance, and be so far removed from its natural position as to be familiarly called "*growing out.*" There is moreover a peculiarity about the waist part of the dress, which is observed to incline on one side; the patient's clothes do not appear to fit her, and are constantly slipping from off the shoulder. The right shoulder appears enlarged and fuller than ordinary, and in the corresponding collar-bone is seen a proportionate elevation. On examining the back in this stage, the traces of deformity in the spine itself are slight, although a close inspection will discover a trifling deviation from the mesial line.

If the disease be not arrested here, it gradually passes into the second stage, which is marked by an aggravation of all the symptoms above enumerated. From the ribs participating in the same debilitating cause, the whole of the right side will have a rounded or barrel-like form. The existence

of a curve between the shoulders will be evident, and on examination the central groove of the back will be found to deviate from a straight line; and a line drawn from a given point along the middle of the back to the elevated shoulder will be considerably longer than a similar line drawn to the opposite side. The left side will become contracted and diminished, the functions of the heart and lungs impaired, and the chest projected. Nature, in her endeavours to restore the lost equilibrium, commences her operations in the lower portion of the back, and lays the foundation for another curve.

As the process of distortion advances, the third stage commences, and a new and more formidable set of symptoms supervene. The spine is thrown into the most unnatural shapes and attitudes, and is gradually changed to a shape more like the Greek Σ (sigma) with three curves. The basin, or pelvis, becomes twisted, the hip projected, and the shoulder and collar bone of the left side depressed. The false ribs approach the brim of the pelvis, leaving only a small space be-

tween them, and in some cases they are in actual contact. The head and chin appear sunk on the chest, and the gait of the young person becomes awkward, shuffling, and irregular; in fact, she is now in an abject state of deformity.

The deranged functions of the heart and lungs now assume a more aggravated form. Dyspnœa, cough, quick breathing, and palpitations, daily distress the patient. In fact, the latter affection is so urgent as to be frequently mistaken and treated for a disease of the heart itself. All these may be referred to the contracted and diminished capacity of the chest, as well as an altered position of the viscera, which, from their firm attachments to the dorsal vertebræ, are forcibly dragged from their natural position in the course of the curve.

Accompanying lateral curvature through all its stages, we have frequently a disordered state of the constitution, and a child who was before in perfect health, strong and robust, loses her vivacity of disposition, becomes fretful and irritable; the muscles waste, and any exercise or movement of the body is performed with indifference, and

attended with fatigue and languor; the appetite fails; the tongue becomes furred, the bowels irregular, and the rest at night disturbed.

Before quitting this, there is one affection, to which I am particularly anxious to direct attention;—I allude to a projection of the right shoulder. Although this is placed amongst the symptoms of lateral curvature, yet it is probable that such an affection may exist without any traces of spinal deformity. Parents are oftentimes misled, and look on this “*growing out*,” as they term it, as an invariable result of spinal distortion; but such is not the case; for the spine may be perfectly straight. It is then a direct consequence of an excurvation of the ribs alone, an unnatural irregularity of their growth, which directs them backwards, and pushes the shoulder blade before them.

SECTION III.

Errors committed by authors as to the Causes of Lateral Curvature.—Irregular Action of the Muscles.—Relaxed State of the Ligaments.—Dislocation of the Vertebrae.—Diseased Vertebrae.—The use of Issues and Setons discussed.

IN reference to the causes of lateral curvature, there have been various speculative and adopted opinions, and numerous have been the hypothetical reasonings advanced in support of them. A very generally received opinion is, that it is dependent on an irregular action of the antagonizing muscles of the spine ; a kind of spasmodic affection of these muscles, by which the spine is forcibly dragged from its natural position. On this subject Mr. Bamfield, who has written on spinal deformity, says, “ Of all the causes, supposed or real, of lateral curvature, there is not one the belief of which has obtained so generally and popularly among the profession, as the unequal

action of the dorsal muscles ; and yet I have not met with one, whose explanation of the *modus operandi* of this cause carried conviction, or whose proofs could be considered conclusive. To produce unequal action of similar muscles, there must previously exist unequal power, or one set of muscles must act spasmodically. I have never seen spasms of the dorsal muscles become permanent, or followed by lateral curvature. How are we to ascertain that an unequal power exists? This cannot be demonstrated." He then goes on to refute the arguments of those who infer that the muscles on the concave side of the curve are in a state of contraction whilst those of the opposite are relaxed, by instancing the case of an individual who receives a contusion or wound of the dorsal muscles, which weakens them. The patient invariably inclines to that side, and is not drawn to the opposite, where the power of the dorsal muscles remains entire. He moreover states, that, from dissections, the muscles on the concave side of the curve, whose power is assumed to be the greatest, are found to be both

smaller and shorter than those on the convex side.

Mr. Shaw has also endeavoured to refute the opinion of an irregular action of the muscles by the following argument:—

“As the part of the spine between the origin and insertion of these muscles (*sacro-lumbalis* and *longissimus dorsi**) is almost *invariably* curved in two opposite directions, the lower portion of the muscles on one side must be in forcible contraction, whilst their upper part must be relaxed, and with the other *vice versâ*. But this cannot be admitted. If the distortion depended on an undue action of the muscles on one side of the spine over those of the other, the curve will be always in the form of an arch, instead of serpentine.” This argument might do, if it could be proved that curvatures of the spine “*invariably assumed*” a serpentine course; but I cannot believe such to be the case. In numerous instances,

* Two of the principal muscles of the back, extending from the lower part of the sacrum to the ribs. Their action, when acting in conjunction, is to draw the spine backwards; but when separate, laterally.

by the closest examination, I have not been able to detect the curve he speaks of in the lumbar region, although the curve in the dorsal vertebræ was very evident. To make this subject comprehensible, it may not perhaps be amiss, to introduce Mr. Shaw's views respecting lateral curvature. "In consequence of the alteration in the state of the shoulder being the first symptom of deformity observed, it is generally but erroneously supposed, that the dorsal part of the spine is the first distorted. Indeed, those who have lately written on this subject have fallen into this error, and have described the curve at the loins as the last which is formed. In cases of diseased vertebræ, there may be a curve only between the shoulders, but it invariably happens in the common lateral curvature, that where one shoulder is protruded there is a curve at the loins."

I cannot accompany Mr. Shaw in this sweeping conclusion, that curvatures in the dorsal portion of the spine are *invariably* secondary to those of the lumbar; for, as already stated, in numerous instances under my notice at present, not the slightest

traces of deformity can be discovered in the last-mentioned vertebræ. Still it would be folly to deny the frequency of distortion in the lower portion of the back. Mr. Shaw in this instance, to use a common phrase, “places the cart before the horse,” and regards as a cause what is simply an effect. An alteration first takes place in the form of the spine about the centre of the back—say, from the seventh to the fourth dorsal vertebra; the natural equilibrium of the body is now lost, but nature endeavours to restore it by producing a second curve in the loins, and thus a curve similar in character to the italic *f* is produced. As the process of distortion advances, the whole spine will be thrown into the most unnatural attitudes of deformity, by which it deviates entirely from the spinal line, and is gradually changed to a shape more like the Greek Σ (sigma) with three curves.

I am happy to find from Mr. Coulson, who has recently written on this affection, that his views and mine respecting the primary curve are the same. Mr. Bamfield, too, after mentioning his conviction that the curve more frequently commences in the middle

of the back, says, "Let us endeavour to explain, how it occurs that the fourth dorsal vertebra becomes the point of projection oftener than the seventh.* Take an elastic conical pyramid like the spine, whose base is a fixed point; apply a weight or bending force to its apex, so as to bend it down, and an arc will be formed whose greatest convexity will project beyond the perpendicular line when straight. It will also be perceived that it will bend more above its centre than below it."

It may be objected, that all analogical illustrations derived from mechanics must be imperfect; but take away the moving powers of the bones, for instance the back, or let them be paralysed so as to be rendered unequal to their movements, and it may be asked, what does the spine present but a complicated piece of motionless mechanism? I have not entered into this subject from an impression that the treatment in either case would vary; still our object should be directed to the removal of the primary curve.

* Mr. Bamfield here alludes to posterior curvature; but the same example applies to the disease in question.

Another very fruitful source of lateral curvature has been supposed to exist in a diseased or relaxed state of the connecting ligaments of the vertebræ; but I am disposed to look on this relaxed condition as an effect, and not the cause, of spinal distortion. For the disposition of the curve must necessarily put these ligaments on the stretch; and such being the case, a permanent relaxation of them ensues, which the following case, related by Sir Astley Cooper, illustrates. An officer on board ship, for some dereliction of duty, was suspended by the right arm, with a weight attached to his foot, for about an hour; the consequence was, that the muscles and ligaments surrounding the joint became so relaxed that he could ever after at pleasure luxate and reduce his shoulder. After a dislocation has once happened, from the relaxed state in which the ligaments are left, the slightest exertion is frequently sufficient to occasion displacement. I knew the case of a barber, with whom the simple act of yawning effected this. I do not think any change of structure in either the bones or liga-

ments takes place in the earlier stages of lateral curvature; but as the disease progresses, the ligaments on the convex side of the curve become relaxed, and a partial absorption of the bones and intervertebral substance takes place on the concave side, simply from mechanical pressure.

Another cause of spinal curvature has been supposed to exist in the luxation of the vertebræ. The observations on the cause above mentioned are applicable here, and the folly of such an opinion is apparent, when we consider the very compact and close proximity of one vertebra with another, and the number, strength, and shortness of the connecting ligaments. Sir Astley Cooper denies that dislocation ever takes place without fracture, even when great mechanical violence has been applied. He says, "If dislocation of the spine do ever happen, it is of very rare occurrence, and I have never met with a case of it; still it is possible that dislocation of the cervical vertebræ may happen, as the articulating processes are more oblique in them than in the other vertebræ. Dislocation of the spine seldom occurs without a

fracture of the articulating processes, or of the arches of the vertebræ. Whenever fracture happens, displacement is the result, and the spinal marrow becomes compressed." Hence we may reasonably infer, that if dislocation be the frequent cause of lateral curvature, we should have symptoms indicative of compressed spinal marrow, and a corresponding loss of power over the voluntary muscles of the upper or lower extremities; but this is of very rare occurrence.

Another very prevalent opinion is, that lateral curvature depends on carious disease of the vertebræ. This is a very mistaken notion; and the practitioner who would adopt it deserves censure, the treatment being such as leads to the most disastrous consequences.

How often have I witnessed patients doomed to suffer the torturing effects of issues and setons introduced as the only effectual remedy or palliative for this disease, when no such application need ever have been made. Of all the patients with whom I have consulted (and those not a few) as to the amount of relief afforded, they have

invariably, and with one accord, seriously repented the time they ever submitted to their application. Independently of the degree of feverish excitement an issue itself sets up in the constitution, there is frequently, from a weakened state of the circulation, an extensive destruction and sloughing of the soft parts. The constitution, before weak, as a natural consequence from this new source of irritation, becomes still more so, and hectic fever and other anomalous symptoms supervene.

I am happy to find, that these measures have already been abandoned by some of the most eminent men in our profession.

Instances of carious vertebræ in this variety of curvature are rare; and where they have occurred, the caries has been occasioned by scrofulous action, which has extended to the intervertebral cartilages and ligaments, and excited an ulcerative action in them, from the effects of which the vertebral joints have been destroyed, and the necessity of a cure by ankylosis induced, as in excurvation.

SECTION IV.

Remote Causes of Lateral Curvature.—Debility of the Spinal Muscles.—Posterior Curvature more frequent with Young Children.

HAVING pointed out the errors frequently committed by authors relative to the causes of lateral curvature, and offered a few observations in refutation thereof, we will now proceed to the remote causes of this affection, and with this premise, that lateral curvatures make their appearance with children under the adult age, almost universally during the growth of the body, and at a time when the muscles, bones, and ligaments have not attained their natural degree of strength.

The spinal muscles partaking the same structure as all other muscles in the body, are, like them, equally liable to debility and loss of power; and, in fact, this is a most common occurrence. Whether this debility be congenital or acquired,

if not corrected, the resulting effects are more serious than a weakness of the other locomotive organs.

As this sometimes commences at an age when the little patients have not acquired the power of utterance, or making known their wants to the world, there are no symptoms, either common or peculiar, which will enable us to detect its existence; and it is not until the nurse or attendant, whilst washing or dressing the child, accidentally discovers a projection that our attention is at all called to the state of the back. Should it have arisen at a more advanced age, a sensation of weakness along the course of the back will be the first indication of the disorder, and an incapacity to preserve the spine erect for any length of time, which becomes more perceptible towards night. As it progresses, this feeling becomes more and more distressing, until at length the patient finds it almost impossible to preserve the spinal muscles in a state of contraction longer than a few minutes. An inclination of the body takes place to one side or the other; and very frequently, after various

attempts to keep the spine erect, the muscles yield suddenly and with a jerk. This affection of the spinal muscles I am disposed to regard as the remote cause of lateral curvature.

With infants and very young children lateral curvature is rarely seen, posterior curvature being more frequent. Resulting as this does from causes precisely similar to the former, we must look for some co-existing circumstance on which this deviation depends; and I think we may safely attribute it to an *uniform* want of action in the muscles attached to the spinal column. The spine receiving support from neither side, and bending under its superincumbent weight, would mechanically project posteriorly, on the same principle that an elastic stick curved in the same direction as the spine, with a weight imposed upon its apex, would do. In adults, from the habitual practice of exercising more frequently the muscles of the right side, and other acquired habits, the muscles of that side, although weak, are in a degree stronger than the left; hence, as the spine yields posteriorly, the muscles, by a comparatively slight exertion,

gradually and insensibly draw the spine in that direction.*

* This opinion may appear at variance with one advanced in a future section. But I mention the right side merely for the sake of example. To whichever side the curve inclines, I firmly believe the direction to be given it by a predominance of muscular power, although both sides are in a weak state.

SECTION V.

Injurious Effects of the present System of Education.—Constraint to which Children are wrongly subjected.—Bad practices adopted at Public Seminaries.—Muscular Action impeded.—Use of Corsets considered.—Bad Effects of Tight Lacing.—An awful instance of death.—Mr. Coulson's views on the Use of Corsets.—Horrors of Manufacturing Districts.

It has been justly remarked by those advanced in years, that spinal distortions are much more frequent amongst girls of the present age than formerly. When we consider the innumerable constraints imposed upon young ladies at this period, the artificial manner in which they are brought up, we cannot be at a loss to account for their frequency. The principal and only aim now-a-days, regardless of the health and figure of a girl, is to load her with as many accomplishments as she can possibly convey from a boarding school, the rules of nature being utterly abandoned and engulfed by this all-absorbing and strange in-

fatuation of society. The time which should be spent in exercise is thus assiduously occupied in the acquirement of those accomplishments the attainment of which acts so prejudicially on their general health and figure. Let it not be supposed that I condemn those delicate accomplishments which add so much to the charms and attractions of the female; but I do condemn the injudicious manner in which they are forced upon young ladies. The mind should never be cultivated at the expense of the body; physical and mental education should go hand in hand together. I am aware, in all schools there are certain hours in the day allotted for the amusement of the children in the open air; but they are sent out without any admonition or advice how this portion of their time should be occupied, whether in active amusement or not. The duty of a governess is supposed to terminate with the children at the expiration of the school hours; hence they have no one to direct them, and these their leisure hours are either idly thrown away, or perhaps occupied in preparing their lessons for the subsequent day, from a dread

of punishment, or childish ambition. Thus, the necessary degree of exercise, so essential for the preservation of their health and figure, is altogether abandoned.

Education of the present day has been justly accused of producing this curvature, by establishing habits that deprive the dorsal and lumbar muscles of their natural exercise and movements, and thus inducing debility. During this state of debility, the spinal muscles are doomed to perpetual exertion from the attempts made to keep the body perfectly erect, both in the standing and sitting posture. This degree of restraint gradually wearies and tires the muscles, already in a state of weakness; and when the eyes of the governess are removed, relief is afforded by allowing the body to incline on one side, and thus is the basis of lateral curvature laid.

Thus from too great an anxiety about the elegant and proper developement of female figure, tyrant Fashion, under the apparent sanction of custom, and the specious guise of education, has usurped the prerogatives of nature, has abolished

the freedom of muscular action, and has presumptuously substituted the rules of art, to direct the growth and mould the form of the human figure, and direct its muscular powers! Surely the Creator never intended these restraints? Nature disdains them; and He who gave us powers to maintain the spine erect, also ordained its form to be bent, and its movements to be unfettered.

Before man became subject to the influence of refined civilization, he enjoyed the free exercise of all his muscles in the most untutored and unlimited manner, practised what attitudes he pleased, indulged in such sports and pastimes as he listed, and when weary, assumed the recumbent posture he chose, without being shackled by the dictates of art. Spinal deformity was then unknown to those who lived in a free state of nature. The growth of the body, the proportions of form, the adjustment of the figure, the turn and direction of the bones, were left to the unerring hand of Nature. But, by the force of cruel fashion, nature is almost forsaken, and art is so preposterous and assuming as to offer dictates and prescribe directions to form.

the body agreeable to its natural configurations, and parents and proprietors of female seminaries are so unreasonable as to submit to their guidance. Against these artificial habits and customs wisdom has launched its mandates, genius has levelled its enlightening arguments, experience has pronounced its judgment, reason has fulminated its reproaches, wit has pointed its keen shafts of ridicule, and authority has proclaimed its interdictions; yet the folly of fashion increases, and its prevalence extends.

In passing through the school-rooms for young ladies, what can be more appalling and preposterous, than to see the motionless figures of a long row of young ladies, lying on inclined or horizontal planes of boards, “like *patients* on a monument smiling at the *white-washed ceilings*, or like the mute statues on tomb-stones of those interred beneath, and from which we should hardly distinguish them, were it not for the occasional movements of the muscles of their (should be) brilliant eyes or laughter-loving muscles of the face, whose situation defies control and eludes confinement.”

Before these fashionable follies of modern education are seriously thought on, and when a girl enjoys an unlimited freedom of all her muscles, and is allowed to indulge in the playful and sportive amusements incidental to the vivacity, spirit, and buoyancy of youth, these cases of lateral curvature rarely present themselves. But immediately a young lady emerges from this tender age all active amusements are thrown aside, dame Nature despised, and her admonitions disregarded.

At this age, too, a girl begins seriously to reflect upon what she considers the improvement of her figure; and, contrary to common sense, the attributes of Nature are disdained, and her body *must* be incased in a stiff and unyielding pair of corsets. Tight lacing now commences, and, pulling and tugging for hours together, attempts are made to alter the natural formation of the waist.

It is a very prevalent notion, that the beauty and elegance of a figure depends on the smallness of the waist; but were the anatomy of the

human skeleton more generally known, the folly of this would be apparent to all. The natural formation of the skeleton is the reverse of this; for, remove the arms and shoulders, and it will represent a cone, with its base below and its apex above. Annexed are two drawings, showing the natural form of the waist, as also an unnatural one, the result of tight lacing.

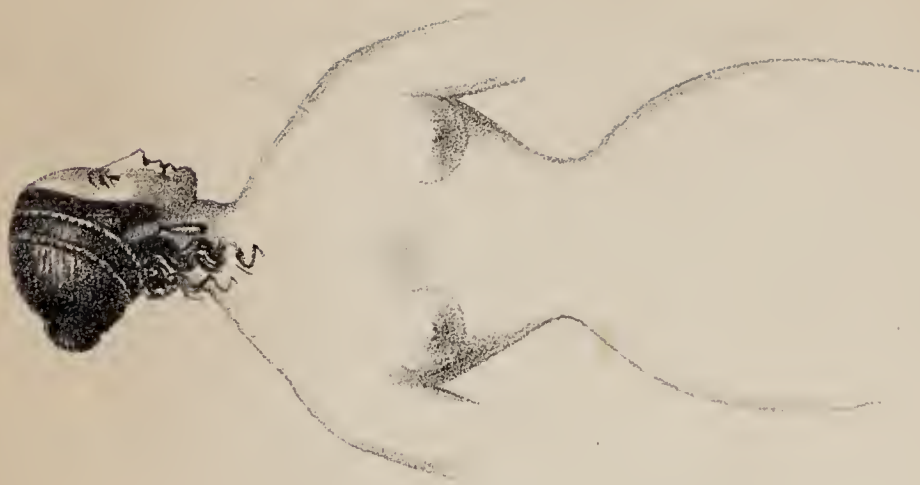
But it may be asked, what has tight lacing to do with the disease in question? The answer is, directly inducing debility of the spinal muscles by depriving them of their natural degree of exercise, and indirectly by producing a derangement of the general health.

What must be the abnormal condition of the internal organs of that girl, who, wasp-like both in figure and disposition (this latter from a physical cause) flutters about the drawing-rooms of the gay and fashionable.

We have only to look at "*the green and yellow melancholy*," the jaundiced look, the rayless eye, and fetid breath, to be convinced of the unhappy state of her constitution. I firmly believe, hys-



Natural Waist.



Unnatural Waist.

teria, one of the most distressing affections incidental to young unmarried females, may be more frequently attributed to this cause than any other. From *post-mortem* examinations of the bodies of those who have died from the effects of these injurious practices, the internal viscera have not only been found diseased, but absolutely removed and pushed from their natural situation. Dr. Duffin says, "The form of the lungs and liver is familiar to every one who has had an opportunity of passing a winter in the dissecting room. These organs are frequently found moulded into shapes the most distant from natural, conforming in fact to the unnatural configuration imparted to the chest and lower ribs, resulting from long-continued injurious pressure.

How, then, can they be reasonably expected to perform in a proper manner their peculiar functions, essential as these are to the preservation of perfect health?"

"Nay, there are not wanting instances wherein these injurious practices have been carried to a much greater extent. We remember reading in

The Times newspaper, a few years ago, a case similar to the following, which is extracted from the *Nottingham Review* for October 3, 1834:

“ LACED TO DEATH.—Harriet, youngest daughter of Mr. Tory, farmer, at Wisbeach, died suddenly on the 18th instant, in consequence, it is supposed, of being too tightly laced. A coroner’s inquest on the body returned the verdict, ‘ Died by the visitation of God.’ It should have been, Squeezed to death.

Numerous examples of similar unfortunate events might be adduced; but I cite this, I trust, as a sufficient warning.

This being a subject fraught with so much importance to the fair sex generally, I shall offer no apology for quoting with some slight abridgement the following observations from Mr. Coulson’s excellent work :*

The eager desire of amending the defects of nature has induced the use of stays, as a mechanical means to prevent or correct those forms which are commonly ascribed to her errors, but

* On Deformities of the Chest and Spine, 2d edition, page 174.

which we might more frequently impute to our own.

Now every young woman knows, that one of the most conspicuous differences between the young and the old consists in the less or the greater distension of the waist. Is it then unaccountable or unnatural, that she should prefer seeming young to seeming old? Every young woman knows, that one of the most conspicuous differences between the maiden and the matron consists in the same less or greater distension of the waist. Is it unnatural, then, that she should prefer seeming maidenly to seeming matronly. Men who write so injudiciously do not promote the interests of truth. It is the use of force, and excessive compression, that are alone blameable.

When, indeed corsets are employed to render the chest as small below as possible—when the young lady spends a quarter of an hour in lacing her stays as tight as possible, and is sometimes seen by her female friends pulling hard for some minutes, next pausing to breathe, then resuming her task with might and main, till, after perhaps a

third effort, she at last succeeds, and sits down covered with perspiration, then it is that the effect of stays is not only injurious to the shape, but is calculated to produce the most serious inconvenience.

And what is the effect upon the eye and mind of an observer? It excites an instantaneous conviction of artifice, and a very natural suspicion of its necessity; notions equally at variance with beauty and purity are called up, and the object of these dark thoughts may excite much more contempt than admiration. When a lady indeed is tightly laced, she loses at once the character of beauty, of grace, and of innocence.

If the ancients, who have left us the most perfect models of human beauty, obtained it by simple means, by supporting the shape without compressing it, we must necessarily obtain the opposite results by our folly in attempting to form the shape by means of whalebone bodies and corsets.

The human form has been moulded by Nature, and the best shape is undoubtedly that which she

has given it. To endeavour to render it more elegant by such means, is to change it ; to make it much smaller below and much larger above, is to destroy its beauty. To keep it cased up in a kind of domestic cuirass, is not only to deform it, but to expose the internal parts to numerous and frightful accidents.

Under this compression, the development of the bones, which are still tender, does not take place conformably with the intentions of nature, because nutrition is stopped, and they consequently become twisted and deformed.

Women who wear very tight stays, complain that they cannot sit upright without them, nay, are compelled to wear *night stays* when in bed ; and this strikingly proves to what an extent tight lacing *weakens the muscles of the trunk. It is this which predisposes to lateral curvature of the spine.*

From these facts, as well as many others, it is evident, that tight stays, far from preventing the deformities, more or less considerable, which an experienced eye might remark among ninety out of

every hundred young girls, are, on the contrary, the cause of these deviations. Stays, therefore, should never be worn, under any circumstances, till the organs have acquired a certain development; and they should never, at any period, be tight.

A well-known effect of the use of stays is, that the right shoulder frequently becomes larger than the left, because the former being stronger, and more frequently in motion, somewhat frees itself, and acquires by this means an increase, of which the left side is deprived, by being feebler and subjected to continual pressure.

In many persons tight stays displace the breast, and produce an ineffaceable and frightful wrinkle between it and the shoulders; and in others, whom nature has not gifted with the plumpness necessary to beauty, such stays make the breast still flatter and smaller.

Generally speaking, tight stays give rise to those indurations of the mammary glands, the cause of which is frequently not understood, and which are followed by such dreadful consequences.

The muscles or organs of motion are enlarged

by free exercise, and are destroyed by compression. Every degree of this, as exercised by stiff stays, diminishes and enfeebles the muscles of the chest: a great degree of it absolutely annihilates them. Long before that is accomplished, the stays become necessary for support, instead of the muscles; but as their support is remote from the spine, as well as inadequate, it yields, and *lateral curvature, or crooked back, ensues*. Retreat to natural habits is now difficult or impossible; if the muscles retain any power, they increase the curvature, and the wretched being is reduced to the necessity of obtaining support, and maintaining existence, by stays, still stiffer during the day, and by *night stays* when in bed.

Difficult labours, and the utter wreck which they produce of health and beauty, are equally the effects of the hip being altered during youth by the pressure of stays.

After speaking thus explicitly of the deleterious effects of tight lacing upon the shape and external configuration of the body, Mr. Coulson goes on to describe various affections to which the internal

viscera are obnoxious from these pernicious practices; and really it is frightful to perceive the diseases which aspirants to worldly fashion bring upon themselves.

Ladies!—young ladies! be advised; hear the warning voice of one, who, although an ardent worshipper at the shrine of beauty, yet despises the false conceptions and grand mistaken notions entertained of female beauty and elegance. Nothing can be beautiful which seeks for its perfection the destruction and perversion of Nature's laws—nothing elegant, which ascribes to itself the rules of art in opposition to the dictates of nature.

A delicate and slender figure is full of beauty in a young person, but suppleness and ease confer an additional charm. Yet most women, eager to be in the extreme of fashion, lace themselves in their stays as tight as possible, undergoing innumerable tortures, appear stiff, ungraceful, and ill-tempered. Elegance of shape, dignity of movement, grace of manner, and softness of demeanour, are all sacrificed to foolish caprice.

The following is an article which I have selected and abridged from Mr. Thacrah's work on "Arts, Trades, and Professions, as affecting Health and Longevity." The employment of young children in any labour is wrong. The term of physical growth ought not to be the term of physical labour: light and varied motions should be the only effort—motions excited by the will, and not by the task-master—the run and the leap of a buoyant and unshackled spirit. How different the scene in a manufacturing district! No man of humanity can reflect without distress on the state of thousands of children, many from six to seven years of age, roused from their beds at an early hour, hurried to their mills, and kept there, with the interval only of forty minutes, till a late hour at night; kept, moreover, in an atmosphere impure not only as the air of the town, not only as defective in ventilation, but as loaded also with noxious dust. Health—cleanliness—mental improvement, how are they regarded? Recreation is out of the question. There is scarcely time for meals. The very period of sleep, so necessary for the young, is

too often abridged ; nay, children are sometimes worked even in the night. The time of labour in the flax mills is generally excessive. When the former edition of this work was published, the people were working from half-past six in the morning until eight at night, and were allowed but an interval of forty minutes in all that time. The engine was stopped only at noon, and the operatives consequently were obliged to take breakfast while they pursued their labour, one tending the other's machinery while the latter took his hurried meal. Children sometimes have not had an opportunity of eating until 10 A. M., though they had been at the mill from half-past five, and must have risen from their beds half or three quarters of an hour before. At the present time the work commences at six, and ends at half-past seven.

The sound of the steam engine anticipates often the crowing of the cock of a morning. While the engine works, the people must work. Men, women, and children, are thus made yoke-fellows with iron and steam. The animal machine fragile at best, subject to a thousand sources of suffering,

and doomed by nature in its best state to a short-lived existence, changing every moment, and hastening to decay, is matched with an iron machine, insensible to suffering and fatigue. All this, moreover, in an atmosphere of flax dust for twelve or thirteen hours a day, and for six days in the week."

Such, then, being the state of society of the present day, both as regards the physical and mental education of youth amongst the upper and lower classes, can it be wondered at, when visiting the families of the rich and fashionable, so many objects of deformity continually present themselves before our eyes; or, directing our steps from thence, turn into the close alleys and bye streets of manufacturing districts, where squalid poverty resides, where ill-clothed and half-starved objects glide about like so many spectres, shadows of what they should be—can it be wondered at, I repeat that our paths are constantly beset by these pitiable cases of deformity.

Affections of this kind, comparatively speaking, are rare among the middle classes of society. And why? Because, here, nature is unshackled by the

restrictions imposed by art, children are allowed an unlimited freedom of muscular exercise, they are permitted to indulge in those sportive pastimes and active amusements so sought after and appreciated by youth, and when wearied or fatigued with childish sports, assume those attitudes most grateful to their already exhausted frames.

The children and families of parents forming this portion of our community are exempt from the fashionable follies and luxuries of the rich, and the squalid abodes and miseries of the poor; hence it is they are so herculean and robust in their frames.

SECTION VI.

Wrong Positions which result from Debility of the Spinal Muscles.—Bad Habits acquired in Standing, Sitting, Writing, Drawing, and Music.—High Stool objectionable.—Position of Lying.—Practice of carrying Heavy Weights on one Arm, &c. &c.

FROM an attentive perusal of the foregoing observations, our views respecting the primary or remote cause of lateral curvature will be apparent. Debility of the spinal muscles may therefore be regarded as an inexhaustible source from which these affections derive their origin. The spine, comparatively soft and flexible, yields to the superincumbent weight of the head and shoulders, because the muscles which closely connect the bones together, and should by their action keep them in their respective situations, are enfeebled.

This state of the spinal muscles being induced, whether from idiosyncrasy of constitution,

or as the result of practices already mentioned, there are certain bad habits acquired by children, whether in the position of sitting or standing, which may be regarded as the immediate causes of these affections.

I would instance, in the first place, a particular habit children acquire, while standing at table or repeating their lessons, of balancing the body on one leg, or crossing one foot over the other, so as to relieve themselves by assuming different attitudes. This is very injurious, and tends to depress the shoulder on the side on which they stand; and the head being thrown to the opposite side, it gives the spine a lateral direction, throws out the hip, and hollows the body.

Girls, during the same act, relieve themselves by passing one hand round the back, so as to support it, and thereby draw down the opposite elbow, and consequently the opposite shoulder.

By constantly sitting on the same side of the fire-place or window, young persons are apt to contract a habit of leaning to one side, whereby

one shoulder is raised and the other depressed, and the natural balance of the body destroyed.

These observations are applicable to the various positions of writing, drawing, &c. Writing being performed most universally with the right hand, is injurious, from the right shoulder being constantly raised above its fellow; to remedy which it has been recommended to place a book beneath the left elbow.

The pursuits of young artists are open to the same objections, from the acquired habit of sitting hours in the day, before their paintings and drawings, with an inclination of the body to the left side, with the left arm resting on the elbow, or hanging by the side, sometimes with the palette in the left hand, whilst the right arm and shoulder are raised for the purpose of directing the pencil, and the head is directed to the left shoulder, and in this position the spine is kept in a state of lateral curvature for hours together.

Certain positions at the piano and harp are also very objectionable. The round stool, with-

out a support for the back, on which young ladies are placed to practise for hours together, and with strict injunctions to sit upright, and menaces of punishment if they stoop or bend; but the muscles gradually tire and weary, and repose is sought by allowing the body to sink on one side.

In this position of sitting with the back unsupported, the muscles of the back are in a permanent state of contraction; it is therefore the most fatiguing attitude in which young ladies can be placed.

Another position of sitting which I have frequently remarked as being highly injurious among children, is the practice of sitting on high chairs with the feet off the ground. In this position they invariably seek support by placing their feet on the bars, and leaning with their bodies forwards, the knees approaching the chest, at the same time that the spine is thrown into a bent position.

The habit, which some children contract, of sitting with one half of the body on the side of

a chair, has a tendency to produce this curvature, from the fact, that as the base of support is narrowed and equilibrium destroyed, to keep themselves in this posture, they are compelled to throw the body on one side, thus depressing one shoulder while its fellow is raised, and giving the spine a lateral direction.

Different positions of lying may also influence the disease in question. Bamfield speaks of young girls and boys who sleep two in a bed, becoming liable to lateral curvature from the habit of sleeping on one side, as also young persons who sleep constantly with one side of the head and shoulders resting on pillows, in which position the spinal column is kept bent.

Such are the frequent bad positions resulting from debility of the spinal muscles, and such may be regarded as the frequent causes of lateral curvature. Over these positions habit has some control; but there are, again, other causes entirely beyond its influence—such as a disproportionate growth of the lower extremities,

rheumatic affections of the muscles, abscesses, affections of the hip joint, wry neck, &c. &c.

It has been observed, that as the convexity of the curve is frequently toward the right side, it might be attributed to the presence of the aorta* on that side; but Bichât, a French writer, imagined that it more probably arose from the circumstance, that the principal acts of life were performed with the right hand; but on this, I am convinced, no reliance can be placed, for they may be seen almost as frequently on the left side.

The habit of carrying heavy weights on one side—with nursery-maids, for instance—may be also placed among the immediate causes of lateral curvature.

Rickets being a disease of debility, and that principally of the vascular and circulating system, it occupies a place among the remote causes of this disease.

I would strongly recommend parents, and those who have the education of growing children,

* The principal blood-vessel of the body.

to pay strict attention to the manner in which they perform the various attitudes and motions of life ; although too strict an attention to them may by some perhaps be deemed superfluous and fastidious.

SECTION VII.

Use of Instruments in the Treatment of Lateral Curvature, and their Injurious Effects.

THE treatment of lateral curvature embraces a subject of the greatest importance to mankind generally. Therefore let me urge on parents, and those connected with public seminaries, the propriety of paying attention to these affections in their earlier stages. If such admonition be regarded, the greater will be the prospect of cure.

Prior to entering upon the treatment of those deformities, it may not perhaps be deemed irrelevant to say a little in reference to the various kinds of machinery usually had recourse to.

The idea that a complicated machinery is all that is requisite for the cure of these affections, has induced many a talented mechanic to exercise

his genius towards the production of such a one as might be regarded perfection; and, strange to say, their great aim appears to be in producing those of the most complicated nature.

Whatever may be the workmanship bestowed on these, they all tend to two great points, that of putting the vertebral column on the stretch, and removing as much as possible the superincumbent weight of the head and shoulders from off the spine.

The design for which they are used is praiseworthy, but those in common vogue are worse than useless.

I do not condemn them from the very general opinion, that as this object is attained by fixing the machine on the pelvis, the bones of this cavity become compressed, its diameter shortened, or its natural openings contracted. But, as it is of paramount consideration in the treatment of these cases, to allow the muscles of the spine a moderate and well-regulated degree of exercise, we cannot expect to derive much benefit by taking from them that which conduces so much to the restoring

them to their natural degree of rigidity and firmness.

The muscles, whose office it is to support the spinal column, by the application of these machines, are deprived *in toto* of those movements so essential toward restoring them to their original condition. They become daily weaker and weaker, and less able to support the spine. The mechanical pressure of the machine, moreover, increases so much the activity of the absorbent vessels that the muscles gradually dwindle and waste.

Another insurmountable objection to their use is exhibited in the fact, that, after being worn some time, they cannot be dispensed with. They become as it were a second nature, and a discontinuance of them strikingly illustrates the condition in which the muscles are left—they are weaker and more enfeebled, and the individual, as a consequence, becomes more deformed than ever.

I speak thus explicitly on the subject of mechanical apparatus in the treatment of lateral curvature from a conviction and a knowledge of the injurious consequences likely to ensue from

their injudicious application, and moreover to warn parents not to be deceived with any assurances that the machine will do good.

The deformity in many cases of lateral curvature, depends a great deal on the displacement of the muscles, a folding up as it were, or rumped state of them in certain positions—for instance, about the shoulders and loins. From rest and pressure the muscular substance wastes, and, as a consequence, the deformity is in some measure removed. Such changes cannot be regarded as marks of improvement.*

* Want of exercise is alone sufficient to waste muscular structure. This may be instanced in those who, from some injury, have been compelled to keep a limb quiet and in one position, or those suffering from paralytic affections.

SECTION VIII.

Treatment of Lateral Curvature.—Derangement of the Constitution preceding the Local Affection. — Causes of this Derangement, and its Treatment. — Influence of the Mind over the Functions of the Liver.—Effects upon the Female Frame.—Disappointment in Love ;—its fatal Consequences.

THE first thing to be attended to in the treatment of lateral curvature is an inquiry into the state of the patient's general health ; for although much may be done by other means, yet an inattention to this will not favour our success.

In tracing to its origin the distortion so prevalent among girls, we must not confine our attention to the limits of a few years, but institute inquiries respecting their constitutions during childhood, when it will probably be found that they then had laboured under those debilitating diseases incidental to that age, such as scarlatina,

hooping-cough, measles, &c., or were frequently affected with those symptoms vaguely denominated dyspeptic.

There are certain symptoms, generally overlooked by an unpractised eye, which frequently precede, and may lead us to suspect an approach of the malady; they all bear a reference to the general health, and have been described thus. When a growing girl loses her vivacity of disposition — when the agile and elastic step is exchanged for a slow and languid walk, and a desire to be at rest — when the countenance assumes a look of care, and fretfulness succeeds to cheerfulness — when the eyes lose their brilliancy, and the cheek its healthful hue, we may be assured that all is not right, nay, that there is some mischief existing in the constitution.

The most certain indications of health in youth are buoyancy of spirit, good appetite, sound sleep at night, cheerfulness, and delight in active amusements, brightness of the eyes, clearness of complexion, and a proper performance of all the functions of the animal economy — digestion,

respiration, and circulation. But these attributes of nature gradually forsake them ; and,

“ Like the lily,
That once was mistress of the field, and flourished,
They hang their heads, and perish.”

Such are the symptoms which not unfrequently present themselves previous to the existence of any local affection, and which certainly evince a general change from the original condition of the constitution.

How serious and important, then, are the duties of those on whom the care of children devolves, to scrutinize every look, every gesture, every movement ; to watch the slightest deviation from health ; to anticipate all they could say as to their feelings, wants, and desires ; to soothe them in the moments of anguish and of pain ; administer to their comforts with a tender hand ; and to chide them with affectionate and endearing reproof. These, and more than these, are the duties of a virtuous and conscientious mind ; but, alas ! how often have I, a silent spectator, been doomed to witness the opposite conduct, and,

when some petty fault has been committed, to see the little offender loaded with the most vehement and uncalled for rebuke. Parents little know the injury they here inflict on children, both moral and physical.

It shall now be our duty to inquire into the frequent cause of this physical derangement of the constitution.

Connected with these external appearances of constitutional disturbance, we have invariably those symptoms vaguely denominated dyspeptic—such, for instance, as pains at the chest after meals, flushed countenance, flatulency, disagreeable taste in the mouth, furred tongue, fœtor of the breath, pain at the right side and shoulder, irregular condition of the bowels, and all the train of symptoms accompanying this vague and empty term, *indigestion*.

Affections of this kind have been, and still are, treated for their name alone; but the time is fast approaching when the veil by which the mummeries and mysteries of physic have been enveloped must be rent asunder—when the pre-

sent empirical mode of practice must yield to a discerning and enlightened age—when reason and reflection, unbound by the shackles of prejudice, must burst forth in all their native brilliancy, “rejecting what is false, but preserving and maintaining what is true.” Mankind are not now as formerly—they begin to act and think for themselves.

In science there is still a wide field open for further discovery ; and it is to be hoped that there exist those who, by the energy of their enterprising genius, will bring many things to light which are at present involved in obscurity.

I am disposed to look to the liver for the cause of this derangement of the constitution, and which I think may be attributed to a torpid or congested state of that viscus, whereby its functions become impaired, and its secretions altered.

A word or two in reference to the functions of the liver. I do not think medical men generally attach that importance to this organ which, reasoning from analogy and bulk, it appears to deserve. I believe there is a great deal to be

done in anatomy and physiology before we can arrive at any correct estimate respecting the importance of this viscus; nor can I persuade myself otherwise but that it must enjoy functions, if not superior, yet equally important to those usually assigned it, respecting which we are as yet totally unacquainted. We will take, for instance, the kidneys, which, in connexion with the liver, are comparatively small organs; see the quantity of urine secreted by these per diem. Does it appear compatible or consistent with the all-sufficient and admirable designs of Nature, she should, as regards bulk, be so lavish and profuse in the formation of one viscus, whose ordinary functions do not exceed in importance those of the others, without having in view some ulterior object.

Patients labouring under this affection may go about for weeks, nay, months, without their attention being at all directed to the seat of their complaint, or suffering any other than a slight uneasiness occasionally in the right side, or a few anomalous symptoms denominated bilious or dyspeptic.

However, the mischief is slowly and insidiously creeping on, the general health becomes impaired, and, if neglected or unheeded, the poor unfortunate victim is doomed to have his or her career of life terminated by the sudden development of some acute disease, or, what is frequently still worse, linger out an existence tortured with all the horrors and torments attendant on chronic cases.

There are certain symptoms which, when taken conjointly, indicate a disordered condition of the liver; but, in a congested state of that viscus, should all others be absent, there is one invariably present—I allude to pain on pressure in the region of either the small or large lobe of the liver, which in some cases may be slight.

If you ask a patient whether he has ever suffered from pain in the side, the answer frequently is in the negative; but in making pressure as before, desiring them at the same time to take a deep inspiration, he invariably winces under it, with an exclamation of “O, sir, I cannot bear that!”

As it is my intention at some future time to enter more fully into the peculiarities of this affection, I shall reserve what further I may have to say until then.

Before speaking of the treatment, there is one subject to which I am anxious to direct attention, *viz.*, the powerful influence of the mind over the functions of the liver. This is illustrated by every day's experience, even from the child in the nursery to the man of business in his office. Tristram Shandy compares it to a coat and its lining, "If you rumple one, you rumple the other." There is no viscus in the body so much under the influence of the passions as the liver; vexation, sorrow, fear, hope, confidence, and love, all exercise over this organ their tyrannical control.

Such being the sympathy or consent, can it be wondered at if liver affections are so prevalent? So true is this, that if any one will only take the trouble to examine the changes which take place in the kind and quantity of the biliary secretions, as evinced by the evacuations, they will be found

to vary according to the state of the mental emotions to which they have been exposed.

Upon the female frame mental emotions particularly influence the state of the digestive functions. In no one instance is this more strikingly seen than with those who have become inspired with the tender passion. Love, that cordial drop thrown by heaven into the bitter cup of life, has destroyed and ever will destroy more than the conqueror's sword. This is especially evinced in those who have suffered **DISAPPOINTMENT**; like intense grief, it gradually undermines the constitution—hope flies the mind—and the whole bodily powers fail:

Man's love is of man's life a thing apart;
 'Tis woman's whole existence: man may range
 The court, camp, church, the vessel, and the mart;
 Sword, gown, gain, glory, offer in exchange
 Pride, fame, ambition, to fill up his heart;
 And few there are, whom these cannot estrange.
 Men have all these resources; we but one,—
 To love again, and be again undone.—**CHILDE HAROLD.**

As to the treatment of this affection:—

Our object, in the first place, must be directed to the removal of the congested state of this viscus;

and secondarily, to the exhibition of such medicines which by their action will assist in restoring the liver to its normal or healthy state.

Having cleared the bowels with a purge, the first indication is effected by the application of six or eight leeches to the right side; these are to be put on in the interspace where the ribs divide: from three to four will suffice for a child. On a day or two subsequent to the application of these, a blister should be applied over the region of the liver.

As during this treatment there is generally some febrile tendency in the constitution, it will be requisite to administer such medicines as determine to the surface, and excite perspiration. The following may be found serviceable:—

℞ Liquoris Ammoniae Acetatis ℥ iss.

Vini Antimonii Potass. Tart. ℥ xl.

Magn. Sulphatis ℥ j.

Syrupûs Croci ℥ iij.

Magnesiæ Carbonatis ℥ j.

Misturæ Camphoræ ℥ iv.

Mix.—Two Table-spoonfuls of this mixture are to be taken every four or six hours.

Having continued this treatment for a day or so, we may then have recourse to alteratives, either in the form of Plummer's pill, or mercury with chalk, at night, and the following mixture in the day :

Rx. Decoct. Sarsæ Comp. ℥ viij.

Infus. Gentian. Comp. ℥ iv.

Potass. Hydriodat. ℥j.

Mix, and take two Table-spoonfuls three times a day.

With children the best mercurial will be the mercury with chalk combined with the sarsaparilla mixture daily.

Great caution is required in the exhibition of mercurial preparations. It will therefore be advisable not to carry them to too great an extent, otherwise irreparable mischief may be done.

Combined with these means, it will be requisite to keep up a gentle action on the bowels, by the exhibition of some mild aperient occasionally.

The diet in particular must be attended to, taking care to avoid all things likely to produce disorder of the digestive apparatus, and adhering to a diet strictly light and nutritive.

SECTION IX.

Recumbent Position ;—its Importance.—Superiority of the Facial Position. — Excurvation of the Ribs, requiring particular Treatment.

THE next indication in the treatment of lateral curvature is most important, and one which requires particular attention.

To relieve and protect the spinal column from the superincumbent weight of the head and shoulders, is so obvious, that very few observations on the subject will be found sufficient.

When we reflect upon the pathological condition of the spinal column and of the muscles supporting it in lateral curvature, the relaxation of the ligaments connecting the vertebræ together, the weakened state of the spinal muscles, the weight of the head, shoulders, chest, and viscera contained within that cavity, the danger of partial absorption of the bones, and the disposition to

still further distortion, the necessity of this will be apparent.

The means generally adopted for the attainment of this is to place the patient on the back for so many hours in the day,—a position in every respect bad, both as regards the patient's general health and the local affection itself.

Taking this view of the case, I was led to reflect whether this position might not be superseded, and its disadvantages obviated, by a different one; and having seen it recommended by Mr. Bamfield, as one possessing infinite superiority, I was induced to try the facial or prone position, in opposition to this; and experience fully justifies me in adopting it in preference to all others.

The facial horizontal position being a new feature in the treatment of lateral curvature, it may be expected I should offer a few observations in reference to its superior merits.

Horace tells us, "*Malus pastor dormit supinus*," (a bad shepherd sleeps with his face upward); and if we only take the trouble, we may satisfy

our minds on this point by observing that the prone position is invariably assumed by harvesters and hay-makers after the fatigue and toil of labour.

Mr. Bamfield, in allusion to this position, observes:—When a person in health lies upon his face, the vertebral column, partly by its absolute gravity, falls or inclines inwards more than in any other natural position of the body; and should the dorsal and lumbar vertebræ be involved in the curve, this position will tend to diminish it and restore the column to its spinal line.

The patient is enabled in this position to exercise the muscles of the back by moving the head backward or in any direction, and by playing with the legs, and thus rendering exercise of the dorsal muscles compatible with rest in the recumbent position. As this curvature is remotely caused by an atony of the spinal muscles, as physiologists infer that the developement of power of the muscles is in the ratio of their exercise,—and as it is a pathological fact, that muscles waste and sometimes lose their strength from inaction during disease,

the importance of moderate exercise for the dorsal muscles is evident.

In the facial position the patient has a free use of her arms, and can raise herself on her elbows, by which latter movement the scapulæ are pressed backward from their new lateral situation, and directed to their natural site on the back.

Independent of these advantages, we are enabled, by forming a slight angle in the reclining board corresponding with the bend at the hips, to keep up a continual extension of the spine, the chest reclining on an horizontal plane, whilst the legs and lower portion of the trunk follow the inclination of the platform, thus obtaining a twofold object—the removal of all superincumbent weight and pressure, and the maintaining a slow and gradual extension of the spine. The feet ought never to be permitted to rest against any support, for in so doing this latter desideratum is frustrated.

This extension may be increased by the addition of weights to any amount we wish.

As there is frequently attending these affections

a projection of the ribs, we are enabled to use pressure, friction, shampooing, &c.

Moreover, in this position on the platform, the patient can of herself extend the spine, by grasping a rope firmly attached to some fixed point in front, with both hands, and drawing the body forward, whilst weights are attached to the feet.

To compare the two positions:—In the prone or facial position, all superincumbent weight is removed from off the spine; in the supine, or on the back, this is not the case,—for even the weight of the thoracic and abdominal viscera imposed upon the spine in this position is sufficient to retard the cure.

In the prone position, the patient whilst on the platform is enabled to exercise the muscles of the back and neck, a most essential desideratum. In the supine position she is debarred from this *in toto*; and the pressure of lying is of itself sufficient to produce an atony or wasting of these muscles.

In the prone position, the patient has a free use of her arms, and can exercise them as she pleases, whether in drawing, music, &c.; or in the amusement

of reading, playing chess, &c. &c. In the supine position she is deprived of all those advantages, and time passes wearily and tediously.

Whilst lying on the couch, the patient can take her meals, without inconvenience: this she cannot do in the opposite state.

But amongst the good effects of this position I ought to mention the influence it has over the digestive functions. The appetite improves; the bowels become regular; the mind is rendered cheerful, contented and happy; and the body becomes plump and fat, and the face recovers its natural juvenile appearance. In the supine position the most frequent effects are a disordered state of the digestion, and a derangement of the general health. Moreover, from constant pressure on the posterior nerves of the spinal marrow, a paralytic affection of the muscles is sometimes induced, the circulation becomes languid, and ulceration and mortification are the occasional results.

In fine, since adopting the facial position, I have only met with one objection to its use; and this

appears to me a slight one. Although patients at first require coaxing, and feel a little awkward on the couch, yet when the period of cure arrives, and it is desirable they should take more active kinds of exercise than has yet been allowed them, it requires some force of argument to induce them to relinquish it; and, like parting from friends of their youth, or scenes of younger days, they still cast a lingering and wistful glance to the now about to be neglected couch, which has supported them during so many hours of affliction, and has been a silent but beloved companion, over which so many tears were shed.

Not unfrequently after the spine has regained its natural site, we are disheartened by the existence of an affection which, if not controlled, is likely to produce a deformity equal in extent to the disease in question, *viz.*, an excurvation or projection of the ribs on one side, which I have before alluded to.

By some it is maintained, that when the curvature is removed, this as a necessary consequence disappears. Such is not always the case, having

met with instances in which this was the sole cause of deformity.

To remedy this it will be requisite to change the position on the couch from the facial to the oblique lateral position, and on the projecting ribs, thus maintaining a direct and permanent pressure upon the hump.

Under the body, and in direct apposition with this projection, a folded pillow should be placed, and in such a manner that the head and lower extremities bending over it, the intercostal muscles on the opposite side are put on the stretch, and the ribs separated from each other. And, supposing the projection to be on the right side, with a corresponding depression on the opposite one, the patient should be permitted to grasp with the left hand a rope suspended from the ceiling, and at such a distance from the body as to keep the pectoral serratus magnus and other muscles connecting the shoulder with the trunk on the stretch; at the same time directing her to swing the arm in all directions, so that this may assist in dragging the depressed ribs into their original site, and

restoring to the left side its natural round and symmetrical appearance.

In conjunction with these means, she should moreover stand erect on both feet, and raising the left hand perpendicularly it should be allowed to drop over the head to the opposite side, the fingers pointing to the right shoulder; a weight is then to be placed in her left hand, and in this position she should stand until the muscles tire.

SECTION X.

Muscular Structure.—Muscular Contraction.—Conditions necessary to Muscular Contraction.—Influence of the Mind over Muscular Contraction.—Modification of Muscular Contraction by Age and Sex.—Muscular Contraction less powerful in Woman.—Muscular Contraction modified by Habit.

THE name of muscular system is given to the whole muscles taken collectively.

Muscles are organs destined by their action to perform the various movements of the living machine. They are composed of long parallel fibres, of a red colour, collected into distinct fasciculi, or bundles, varying in number and size. These fibres are composed of a great number of smaller filaments, visible only by the aid of a microscope.

These fasciculi, united together through the interposition of cellular tissue, having their extremities attached to bones by the means of tendons and aponeuroses, constitute a muscle.

From the neighbouring trunk the muscles receive distinct arteries, whose size and number are always proportionate to the muscle. They penetrate into its substance from all points, creeping at first between the largest fleshy fibres, then dividing and subdividing into an almost infinite number of ramifications, which insinuate themselves between the smallest filaments, eventually uniting again and forming veins, through which the blood is carried back after having deposited its nutritive particles.

The veins follow in the muscles the same course as the arteries, which they accompany in their whole course, but they surpass them in number and magnitude.

The nerves of the muscles of voluntary motion are of variable size. Excepting the skin and organs of sense no part is so abundantly supplied with them. They proceed almost all from the brain and spinal marrow. Small muscles have never more than a single branch, but those of large size are penetrated by several at once.

After entering a muscle, the nerves divide and subdivide, until they altogether disappear. Phy-

siologists have attempted of late to explain how the nerves are disposed of after arriving at the tissue of the muscular fibre, but their speculations, like many others of a similar nature, have only served to shroud the subject in a darker and still more impenetrable mystery.

There are certain depths beyond which we cannot fathom, and numberless labyrinths through whose mazes we are not permitted to tread ; yet the mind of man, ever arrogant and presumptuous, ever eager and thirsty after the possession of secrets which are wisely hidden from our eyes, presumptuously aims at things beyond its grasp. Thus it is in our researches after that divine principle, that emanation of the Deity, from which arise those phenomena composing the intellect of man, that unknown being the first attribute of which is immortality, and a confidence in the existence of which inspires us with the hopes and assurances of another and a better world, that “undiscovered country from whose bourne no traveller returns.”

Blood contains most of the principles necessary to the nutrition of organs. These appear to be

deposited in their parenchyma at the instant the blood courses through them. The manner in which this deposit takes place is unknown.

There is an evident relation between the action of the nutrition of an organ and the blood it receives in a given time. The tissues that have rapid nutrition have larger arteries; when the action of an organ has accelerated nutrition, arteries increase in size.

Such is the condition of a muscle in its quiescent state; but immediately a muscle acts, various phenomena present themselves. The fibres which before were arranged in straight lines immediately assume a serpentine or zig-zag ~~~~ course; arterial action becomes increased, the blood circulates with much greater rapidity, and an augmentation of animal heat is the consequence.

The power inherent in a muscle for the production of this is called its *irritability*, and the phenomenon itself *muscular contraction*.

It is not within my province at present to embark into speculations respecting the changes which take place in the muscular tissue during contraction,

these are unknown, and, like the vital actions, altogether inexplicable.

It will therefore be sufficient to state, that the conditions necessary to muscular contraction are a free exercise of the brain, spinal marrow, nerves arising therefrom, and the muscles themselves, and that the circulation should be rapid and well performed.

Should any of these conditions be wanting, muscular contraction is weakened, injured, or rendered impossible.

The influence of the mind over muscular contraction is very striking. It is reported of Cæsar, that on the eve of battle he invariably suffered an attack of epilepsy.

Muscular power may be carried to a great extent; this is instanced in the strength of enraged persons, and maniacs. A man labouring under the influence of strong mental excitement, or in other words excessive passion, neither hears, sees, or exists, but through the feeling which excites him. Every muscle and nerve appear strung to their highest pitch; the blood circulates with an almost

fearful rapidity; the muscular contractions are strong, quick and powerful; and the individual himself becomes capable of the most extraordinary acts of violence and strength. This, after a time, subsides—a feeling of weariness gradually takes place in the muscles—the contractions become less and less powerful, and at length altogether subside; for

“ Anger is like

A full hot horse, who being allowed his way,
Self-mettle tires him.”

Muscular contraction, moreover, receives modifications according to the age and sex of an individual. It scarcely exists at all in the foetus, becomes more active at birth, is most perfect in manhood, and almost destroyed in old age.

In woman muscular contractions are less energetic than in man. This distinction scarcely exists before the age of puberty, at which time the contrast becomes striking. In youth, the muscles are thick, strong, and robust; in the maiden, the fibres are weak, lax, and pale, and, with a few exceptions, proportionably smaller.

The skin of the maiden is whiter and more delicate than that of man, and her physical formation is altogether different. She cannot endure the fatigues and toils, "the heats and burthens of the day," with impunity. Her slender and delicate frame was not formed for the herculean tasks which man is oftentimes doomed to undergo. Her feeble arms cannot support severe and long-continued labour; it renders them meagre, and deforms their figure, by destroying that cellular substance which contributes so much to the beauty of their outlines and their complexion.

Independent of these, there exists another class of muscles, which thus far I have not alluded to, as they bear no reference to our present subject. These act independently of the will; hence they derive their name, *muscles of involuntary motion*. By the action of these muscles the vital functions are performed and life preserved. But even these receive certain modifications. Thus, take for instance the stomach, which is an involuntary muscle, and perceive the extraordinary powers of digestion some individuals acquire. This is seen

in inhabitants of northern climates; their stomachs are capable of digesting the hardest and toughest food. The Russians are fond of train-oil, the Siamese of rotten eggs; but were these dainties taken by one unaccustomed to them, nothing would be more likely to disorder the stomach.

SECTION XI.

Exercise —Importance of Exercise in the Education of Children.
—Systematic Arrangement of Exercises necessary.—Danger
of Exercise when misapplied.—Dangerous Practices of Me-
chanics.

I SHALL now proceed to speak of exercise as essential in the treatment of lateral curvature; the effects of exercise over the nutritive functions; classification of exercises generally under two distinct heads, active and passive; the different kinds of exercise included under these arrangements, and the mode of employing them; and lastly, such exercises as are particularly adapted for lateral curvature.

First, then, as to the utility of exercises in the treatment of lateral curvature.

I cannot forcibly enough impress on patients, and those who are entrusted with the education of children, the great importance of an attention to

this, and a perseverance in well-regulated exercise, adopting daily such means as are calculated to call into action the numerous classes of muscles of the body.

This forms so grand a desideratum in the education of children, that it should never be overlooked by those on whom this responsibility devolves.

The ancients were so sensible of this, that they never considered any disease as judiciously treated unless their patients had undergone a course of exercise. Hippocrates recommends them particularly in the chapters which he has devoted to Diet, Regimen, and Dreams ; and Celsus never ends a chapter without speaking of them as essential in the treatment of diseases.

To Æsculapius the Greeks were greatly indebted for inventing a system of exercises, and combining them with medicine in the treatment of diseases. It was during his time that gymnastics were established, and formed a principal feature in the physical education of youth. The directors of these establishments were qualified by the title of

of Physicians; and gymnastics were dedicated to Apollo, the god of medicine.

During the time of Æsculapius, the healing art was exercised exclusively by the priests, who practised upon the credulity and superstition of the people.

Æsculapius is said to be the first who cultivated the science of medicine, and, as Celsus expresses it, “Utpote cum vetustissimus auctor Æsculapius celebretur; qui, quoniam adhuc rudem et vulgarem hanc scientiam paulo subtilius excoluit, in Deorum numerum receptus est.” Inasmuch as Æsculapius is celebrated as its oldest author; who, because he cultivated this science, as yet rude and vulgar, a little more acutely, was received amongst the number of the Gods.

Up to the time of Hippocrates, the art of healing, amongst all nations, was exclusively confined to the clergy.

Hujus autem, ut quidam crediderunt, discipulus, Hippocrates Cous, primus quidem ex omnibus memoriâ dignus, ab studio sapientiæ disciplinam hanc separavit, vir et arte et facundiâ

insignis.* But Hippocrates, of the island of Cos, a pupil of this man (Pythagoras), as some have believed, first of all indeed worthy remembrance, separated this science from the study of philosophy, a man remarkable for his art and eloquence.

From the time of Æsculapius up to Hippocrates, gymnastics appear to have been separated from medicine, and applied only for warlike purposes. At this period they were again revived, and formed a most prominent feature in the treatment of disease. Herodicus, who is said to have been master to Hippocrates, had the honour of restoring them to their original position, and became himself director of a gymnasium. But, blinded by the enthusiasm with which he projected his schemes, he overstepped the bounds of moderation, and killed his patients by the extraordinary long walks he compelled them to take—frequently a distance of between thirty and forty miles, and back, without nourishment.

Whatever exercises young children employ, they should be judiciously and systematically ar-

* Celsus.

ranged; no class of muscles should be submitted to an undue exertion at the expense of others—for in so doing a disproportional developement of muscular structure is the consequence; and should there be a tendency to distortion of the spine, the disease invariably assumes a more aggravated form. Thus, for example, should the curve incline toward the right side, and the right shoulder project,—by a frequent use of the muscles of that side, and a corresponding inactivity of the left, the vertebræ are not only drawn still further from the mesial line of the back, but the muscles increase in bulk, and thus add to the appearance of deformity.

An apt illustration of this is afforded by opera dancers, in whom, from their various attitudes and figures, and their practice of throwing the whole weight of the body on the toes, the gastrocnemii muscles, or calves, become much larger than the other muscles of the body.

In posturers and equestrians there is not this disproportionate developement; for with them the activity of the muscular system is more general,

and they are mostly well proportioned and vigorous men.

I need not go further and cite as examples those who enjoy unlimited freedom of all muscular exercises—those who range about in a state of nature; they are proverbially well-proportioned strong, and active.

“ Dear Nature is the kindest mother still ;
Though always changing, in her aspect mild :
From her bare bosom let me take my fill,
Her never-weaned, though not her favoured child.
Oh! she is fairest in her features wild,
Where nothing polished dares pollute her path ;
To me, by day and night, she ever smiled,
Though I have marked her when none other hath,
And sought her more and more, and loved her best in
wrath.”

Instead, then, of children being cooped up so many hours in the day, devoting their time to those namby-pamby pursuits, falsely termed accomplishments, let them indulge in more active amusements; let the hours of study alternate with those of exercise and repose; let them engage in such pleasing games and sportive amusements as require for their performance an unlimited action

of the whole muscular system; and they will return to their studies with tenfold pleasure, with both mind and body invigorated—for, to use the words of Hippocrates, “Exercise gives strength and firmness to the body, and vigour to the mind.” Nothing is ever lost by the intervention of amusement; but, on the contrary, it adds to the acuteness of the mind, and renders it capable of receiving impressions of a more permanent and lasting nature.

The neglect of physical education amongst females is deservedly to be pitied. Immediately a young lady arrives at that age when she most requires active amusements, the present state of society compels her to refrain from them, and her constant admonition is—not to *romp*.

What can be more injudicious than the system adopted at public seminaries, of marching young ladies, two and two, as it were to a funeral? For my part, I never see a procession of this kind, but I always look on with pity.

Beneficial as exercises are, I should consider myself highly culpable, were I to omit caution-

ing parents against the misapplication of them where lateral curvature does exist, and stating how requisite it is they should be under the superintendence and direction of one possessing an anatomical and physiological knowledge of the natural action of the muscles—one who knows how to confine their action alone to those that are weak and attenuated.

Should children be placed under the hands of the mere mechanic, they will be exposed to imminent risk. Certain forms of spinal distortion frequently terminate in ankylosis, or the bony union of one vertebra with another. In such cases the various kinds of exercise adapted for the one under our present notice would be highly dangerous, and death itself might ensue from an injudicious application of them.

Ankylosis often creeps on so insidiously, and with so little pain, that it altogether eludes the vigilance of one unacquainted with pathology. When it has once taken place, the spine is deprived of its *vis resiliendi*, or elastic power; it is

no longer pliable and yielding, but brittle ; therefore any violent exercise, or undue muscular exertion, any sudden twist or leap, might snap it asunder, and fatal consequences would ensue.

SECTION XII.

Man capable of exhibiting great Strength.—Voluntary and Involuntary Motion.—The power Man possesses over the former.—Spartans famous for their bravery.—Rest and Indolence injurious.—Exercise and Motion essential to Health and Longevity.—Absorption and Secretion.—Effects of both.—Bodies undergoing perpetual Change.—Effects of Exercise over the Nutritive Functions.—Exercise destroys Fat, but increases Strength.—Rest favourable to Corpulency.—Effects of Exercise over the Involuntary Muscles.—Utility of Exercise for Females.

IF we only direct attention for a few moments to the general structure of the human body—the anatomical arrangement, number, and power of the muscles—and the facility with which locomotion and the various acts necessary for human existence are performed, we must be convinced that man was not sent into this world to enjoy unsullied its pleasures and luxuries, but prepared with organs to oppose and surmount the many difficulties and casualties he might have to contend with,

and to exhibit occasionally the most extraordinary and indomitable acts of courage and strength.

The various motions necessary to animal life are arranged under two distinct classes,—*involuntary* and *voluntary motion*. To the former belong all the vital functions,—those motions which take place unconsciously, having no connexion with the will, such as digestion, circulation, &c. &c.; to the latter, movements guided and directed by the will alone, obeying its dictates, and submitting to its control, such as the various attitudes of man, the acts of walking, running, sitting, &c. &c., or any other external movement of the body.

These latter come under the denomination of exercise; and hence it is in man's power to vary them in accordance with his inclination, to augment their intensity, or render them weak and feeble.

The Spartans were famous for their extraordinary feats of strength and bravery; and so unbounded a confidence had they in valorous achievements, that their city was void of walls, regarding their own strength as a sufficient security against an enemy.

For this confidence they were indebted to the cultivation of gymnastics among them. Surrounded on all sides by the most uncultivated and savage nations, they resorted to these exercises as a means not only of improving their physical but their moral forces, and thus they were enabled to protect and defend themselves from invasion.

The success and military achievements of the Roman soldiery were in a great measure attributable to their perseverance in active exercises. They were inured to perpetual labour, to walk between twenty and thirty miles in five hours, each man carrying with him a weight of three-score pounds. They habituated themselves to running and leaping, armed cap-a-pie, and exercised with weapons double the weight of those in common use.

Gymnastic exercises were not exclusively practised by the military. The citizens had a large field set apart, the Campus Martius, wherein were used all manner of robust exercises; and, after their fatigues, they would plunge into the Tiber,

to cleanse themselves, and practise the art of swimming.

Few arguments are requisite to prove, that an absolute state of rest, and indolence, are unnatural, and altogether incompatible with the admirable and all-sufficient designs of the Creator, and, *cæteris paribus*, that exercise and motion are alike essential to the preservation of health and longevity. Not only does the physical strength improve, but also the powers of the mind increase in the same ratio. As the functions of all organs are rendered more perfect and vigorous, so the mind, as a function of the brain, experiences the same important changes.

In the human machine two great contending powers are in constant operation, viz., absorption and secretion. By the action of these, old particles are removed, and new deposited. Should the former predominate, with a corresponding decrease in the power of the latter, man becomes lean, thin, and meagre; he loses that rotundity and plumpness of form, so essential a characteristic of genuine health; the integuments or cover-

ings of the body hang loose and flabby about him ; and the muscles themselves become thin and weak, and incompetent for the performance of their functions.

The powerful influence of the mind over the absorbent and discerning system is thus strikingly portrayed by Shakspeare, in Cæsar's request to Antonius on perceiving Cassius :—

“ Let me have men about me that are fat ;
Sleek-headed men, and such as sleep o' nights.
Yon Cassius has a lean and hungry look ;
He thinks too much—such men are dangerous.

ANT. Fear him not, Cæsar ; he's not dangerous.
He is a noble Roman, and well given.

CÆS. Would he were fatter :—but I fear him not ;
Yet if my name were liable to fear,
I do not know the man I should avoid
So soon as that spare Cassius.”

From the constant operation of these two systems our bodies undergo perpetually changes of form and bulk. From the first dawn of life to its termination, we are losing incessantly, through the different outlets, some portion of the elements of which our bodies are composed. This in time would reduce our strength, and very soon curtail

the period of human existence, did we not possess the means of repairing the structure. Hunger and thirst are the first signs which instinctively admonish us that such a reparation is required.

Propelled by these, food is taken and received into the stomach, a kind of laboratory wherein the alimentary portions are eliminated, and from thence carried into the system, to be deposited in the parenchyma of the different organs.

In speaking of the effects of exercise over the nutritive functions, Mr. Coulson observes, in the work before quoted :—

“By exercise the power of the muscular fibre is increased. When a limb is moved, the muscles which are actuated swell by the more frequent and copious flow of blood into them, and heat is developed. If the motion be long continued, the limb grows stiff, a sensation of lassitude is felt, and a difficulty of further contraction is the result. If the motion were violent, and the blood were called in excess into the limb, inflammation might arise.

If, on the contrary, after intervals of repose, we

perform the same motions, and many times repeat this, we observe an increase of bulk, an energy in the part, in consequence of the more active conversion of nutritious matters into its substance, and also a perfection of action not before enjoyed. Hence in labouring men the limbs employed in their occupations are larger in proportion than the rest; this is the case with the arms of smiths, bakers, boxers, and the legs of porters, couriers, and dancers.

Generally speaking, the effect of active exercises on any part, or any animal, is greater, the more it is in motion.

The person, however, who is constantly employed in muscular exercise, never acquires great strength. If continued exercises are also violent, what is gained does not make up for what is lost, and he wastes quickly.

If, on the contrary, exercise and repose are alternate, it favours nutrition and the developement of muscular power.

The person, then, who acquires the greatest strength, is he who practises muscular exercises

which require great force, but who follows them up with sufficient intervals of repose.

When the body is in a state of repose, the interior functions are indeed in exercise ; but as the organs which execute them do not receive any impulse or excitement from without, their action is slow and languid. Not only the muscles themselves lose their suppleness and energy, the whole organization is enfeebled ; and if the state of repose be continued, the strongest man will ultimately become weak and indisposed.

On the contrary, under the influence of exercise the interior functions increase in activity and power.

In this way the contraction of the muscles produces a general excitement, making all the organs partake of their activity. It is thus that every one must have observed, after active exercise, palpitations of the heart, high pulse, heat, redness of the skin, perspiration, &c. &c.

It is, however, in its effects upon the nourishment and material composition of the body, that it is

most interesting, in relation to the present views, to notice the consequences of exercise.

It is especially in contributing to this function that exercise spreads equally over the body heat and vital energy, and maintains an equilibrium among all the functions."

In fact, exercise is universally acknowledged to be essential to the preservation of health.

The increase of size in the muscles, before alluded to, has nothing to do with fatness; but, on the contrary, exercise tends to make the body lean, by occasioning an increase in the activity of the absorbents, and a proportionable decrease of that adipose or fatty matter deposited beneath the skin, which fills up the interstices between the different muscles, and which adds so much to the beauty and roundness of the female figure.

Labouring men, and those who are much used to exercise, are not fat; but their flesh is firm and strong, and the muscular contractions are capable of overcoming very powerful resistance.

A well-formed and perfect figure, in man, is marked by an unevenness of surface, well-defined

elevations and depressions, pointing out the exact site, course, and developement of the different muscles.

If we are desirous of rendering the flesh of various animals white and delicate, we confine them in a space not large enough to afford them sufficient exercise for their muscles.

Persons who have been long confined, or who live in a state of indolence, acquire great corpulency, although the powers of muscular contraction are considerably diminished. The muscles become lax and weak, and so feeble are their powers of locomotion, that, comparatively speaking, the slightest exertion produces fatigue. “*Ignavia corpus hebetat, labor firmat; illa maturam senectutem, hic longam adolescentiam, reddit.*”*

Independently of the advantages gained by the locomotive organs, exercise imparts additional vigour to the digestive functions, strengthens the action of the heart, excites a free and unimpeded respiration, spreads equally over all the body heat and vital energy, and propels the nutritious parti-

* Celsus, lib. i. cap. 1.

cles of blood into vessels which were before almost impervious.

Exercises for females have been objected to on the plea, that as they tend to prevent the deposition of adipose matter, they must be injurious to the developement of their figure, and that beautiful rotundity so characteristic of their sex. This is wrong; and although violent exercises are incompatible with their delicate organization, still a judicious management of them may produce the most salutary effects.

Women, from the arbitrary constraints of society, generally speaking, are of a weak and lax fibre, and with them the fluids of the body abound. Exercise judiciously regulated has the power of obviating these defects, of increasing muscular energy, and diminishing this redundancy of juices.

That women thus constituted do not enjoy true and genuine health, it requires little to prove. A familiar and striking difference is exhibited between those who, imbibing the fresh and invigorating atmosphere of the country, have recourse

daily to such exercises as call the whole muscular system into a state of activity, and others who, surrounded by an atmosphere loaded with the impurities of a densely populated metropolis, indulge in all the follies and luxuries of a fashionable life. Contrast the clear and florid complexion, the laughing, brilliant eye, the firm elastic step, and happy buoyant spirit of the one, with the sallow look, the rayless eye, the faltering step, and inanimate expression of the other.

What arguments need I further advance in favour of exercise? I trust, sufficient has been said, to impress parents, and those conducting public seminaries, with a due consideration of its importance, and to convince them, that an early attention to this will confer upon their little charges services of greater import than the mere attainment of a few fashionable accomplishments. They secure to them health, strength, and happiness, without which life itself will be but a thankless boon.

SECTION XIII.

Exercises Active and Passive.—Description of each.—Attitudes of Man: — Standing. — Kneeling. — Sitting. — Recumbent Position.

EXERCISE may be either *active* or *passive*. By the former is understood all those movements of the body which take place through the medium of its own inherent power, the power of muscular contraction, such as locomotion, &c. &c. By the latter, those exercises in which this power is entirely at rest, and the body is moved by a power distinct from muscular contraction,—such, for instance, as swinging, sailing, &c.

It may not perhaps be amiss here, in relation to our present subject, to examine these different kinds of exercise, as they are arranged under their distinct heads; but a few preliminary observations on the various attitudes of man, in the ordinary functions of life, will first claim our attention; as, standing, kneeling, lying, &c.

Standing.—Man is the only animal placed erect on both feet, with his head lifted towards the starry element. This being his natural position, not only exalts him above all others of the animal creation, but renders him more competent for the discharge of those arduous and laborious duties he is continually doomed to undergo.

Independently of this, he enjoys attributes of a still higher import, denied to all others. I need only allude to the faculties of the mind, the powers of speech, &c. These are they which declare man to be the “noblest work of God.”

In the position of standing, man is apparently in a state of repose ; but a little explanation will convince us otherwise.

The head, by its articulation with the atlas, or first vertebra, represents a lever of the first kind, wherein the point of support is between the resistance and power ; the resistance is at one extremity, the power at the other.

The point of support is afforded by the head resting on the atlas ; the power and resistance

occupy each an opposite extremity,—one represented by the face, the other by the occiput or back part of the head.

Now were the position occupied by the point of support equidistant from these opponents, the arm of the lever would be equal, and an equilibrium preserved; but should the point of support approximate the power, the arms are then unequal, and the power is overcome.

The latter is precisely what takes place in the articulation of the head with the atlas. The point of support is nearer the occiput, consequently, by the law of gravitation, the head would by its weight fall forward on the chest, were it not for the resistance afforded by the contractions of the muscles at the back of the neck. During sleep this resistance is lost, and consequently the head droops.

Again, the weight of the organs sustained by the vertebral column, the thoracic and abdominal viscera, is fixed upon its anterior part. This produces a tendency in the body to fall forward; but it is counteracted by the strong muscles placed on the

posterior part of the trunk. This also represents a lever of the first kind, the point of support being in the vertebræ themselves.

The weight of the vertebral column &c. is transmitted to the pelvis, or basin. This resting upon the thighs represents a lever of the first kind, the point of support existing in the ilio-femoral articulation.*

The pelvis is placed in equilibrio upon the thighs, but the equilibrium is preserved by the great mass of muscles which surround the hip; it is destroyed by the acts of stooping and sitting, but again restored by the contraction of these muscles.

The muscles placed on the anterior and posterior part of the thigh tend to preserve the equilibrium between this and the leg, whilst the muscles on the posterior part of the leg or calf observe the same regulation with the foot, and prevent the ankle from bending.

The base of support to all these levers is afforded by the feet; and the fatigue of standing, and firm-

* Articulation of the thighs with the pelvis.

ness of support, are in an inverse ratio with the space they occupy.

When the two feet are carried, one forward and the other backward, in a direction parallel with each other, and with a slight separation, the base of support is extended, and our position becomes more firm. When laterally, by separating the feet sideways, the basement becomes widened, and our position less fatiguing. But if we diminish the extent of surface, by placing the feet parallel with each other and in contact, or by standing on one foot, the position becomes painful, and the muscles are soon fatigued.

It is thus, then, by examining the attitude of standing, we are enabled to show, that certain muscles, although apparently in a state of repose, are in a continual state of contraction, and that, in a natural and healthy condition of things, sleep is the only time in which these contractions are suspended.*

* It is here meant that during a state of repose the will ceases to direct and guide the movements of the muscles, as contractions frequently take place during sleep.

Parents can never pay too strict attention to the bad habits children contract in the position of standing; but I very much fear they are neglected, and it is not until symptoms of deformity begin to shew themselves, that they feel alarmed, and their minds become impressed with its importance. There is no position I am aware of, in which so much mischief may be done by the contraction of bad habits. I have elsewhere mentioned a few of the most frequent habits acquired by children in this position.

Kneeling.—This is a position in which the base of support is formed by the knees and legs, consequently it is more extended than in the position of standing; the centre of gravity is, moreover, lowered. These circumstances, therefore, render it more firm; but we are not able to keep thus long, in consequence of the degree of pressure which is kept up on the integuments covering the patellæ, or knee-caps. These bones, unlike those composing the feet, are not guarded by that elastic fatty substance which is seen in the latter. This position would not be so secure, were the body

entirely balanced on the patellæ; to obviate which we flex the thighs, resting them on the legs and heels.

Sitting.—Having in a previous section spoken of the bad habits contracted in the sitting posture, I shall merely here remark, that the easiest and firmest position is that in which we sit with our backs supported, and the feet resting on the ground, the legs being kept at right angles with the plane on which the feet rest.

In this position, the trunk, supplied with an artificial support, requires but little contraction of the dorsal muscles to preserve it erect, and they consequently drop into a state of repose. Easy chairs of the present day are made for the purpose of affording this support to the back.

There are various positions of sitting,—on the ground with the legs extended, on chairs or stools with or without backs, and with the feet supported or off the ground.

Whatever be our posture of sitting, we can remain in it a considerable time; the number of muscles in a state of contraction are few, the base of

support broad, and the centre of gravity lowered. These circumstances, connected with the thickness of the skin, and the amazing quantity of fat surrounding this locality, render the sitting posture easy and comfortable.

Recumbent Position.—Of all the positions above spoken of this is the easiest ; and as it is one which requires little or no muscular exertion, can be continued in much longer than any other. This may be instanced in bed-ridden patients, or those who have suffered from severe injury. It is the position chosen by those who labour under a deficiency of bodily strength and energy, and by all who have suffered from any undue muscular exertion.

After the fatigues of the day, man invariably assumes this posture for the purpose of courting repose. Retiring from all the toils and cares of the world, he seeks obscurity and silence, and in this position gradually drops into a state of oblivion.

During sleep the voluntary are the only muscles in a state of repose ; the involuntary still perform their accustomed duties, although less energeti-

cally than when awake: the heart still beats—respiration still continues—and the different secretions are still performed.

The only organ which appears to suffer from the recumbent position is the skin. This may be attributed to the mechanical pressure which certain portions of the body sustain by remaining long in one position.

A degree of uneasiness is at first felt about some of the most unyielding parts, and where the body is least protected with that adipose or fatty matter already spoken of. Heat and redness succeed to this, gangrenous spots make their appearance, and a sloughing and destruction of the soft parts ensue.

We endeavour to obviate this inconvenience by placing soft cushions and beds beneath that part of the body which sustains the pressure.

SECTION XIV.

Active Exercises :—Walking.—Running.—Passive Exercises :
—Their Effects upon the Human Frame.—Friction.—Sailing.
—Sea Sickness.—Swinging.—Riding.—Horse Exercise.—
Carriage Exercise.

WE will now proceed to speak of the more active kinds of exercise, and such as take place in the ordinary functions of life ; and first, of *walking*.

Walking.—Amongst the various kinds of exercise in general use, walking is the best, as it requires for its performance an universal movement of the voluntary muscles of the body. It throws into action all the flexor and extensor muscles of both the upper and lower extremities, and several of the largest and most important muscles of the trunk.

The involuntary muscles are also called into activity, receiving an indirect impression. The heart's action is accelerated ; the circulation be-

comes more rapid and powerful; and a corresponding increase and improvement in the nutritive functions of the whole system are the results. Respiration is more free and quick, and even the peristaltic action of the intestines is aided.

Walking is an exercise which should be indulged in by all those whose strength will permit them to bear a moderate degree of fatigue with impunity.

When had recourse to, it should be carried far enough to produce a slight degree of languor and perspiration; and this may be greatly extended by the society of an amusing companion or friend, or by directing the attention to objects of a pleasing and gratifying nature.

The exercise of walking, moreover, exerts a powerful influence over our moral faculties. It diverts the attention of the melancholic, and offers the lazy an indispensable resource against *ennui*. We know how well this exercise is calculated to dissipate gloomy thoughts, the vapours of melancholy, and hypochondriacal affections.

Solitary walking ripens the ideas, develops the memory, and generally becomes a good auxiliary

to the work of the mind. Most of those who meditate on a subject deeply, really feel the necessity of walking. Men who have become over-fatigued with exercising the mind, find their ideas burst forth with renewed energy on taking a few paces up and down their library.

Whatever be the mode of walking, it is composed of a succession of steps. A general movement in the flexor muscles of the thigh takes place, while those of its fellow are comparatively at rest, and the extensors in action.

By this movement the thigh is flexed upon the pelvis, and the leg upon the former, to remove it from off the ground; the trunk is then swayed gently forward, and the limb touches the ground, first the heel, and then in succession the whole surface of the foot. A corresponding movement takes place in the other limb, which is detached from the ground, advanced from behind, and made to go through the same movements that were performed by its fellow.

Thus it is, by the alternate actions of flexion and extension of each leg successively, walking is

effected, the body is carried forward, and man is enabled at will to transport himself from one place to another, to satisfy many of his desires, to procure renewed strength and vigour for his exhausted frame, and to divest himself of the many painful impressions which continually assail him.

To describe the variety of bad habits contracted during walking, would require a space almost indefinite. Every individual has a mode of walking peculiar to himself; and frequently from a man's deportment and carriage we are enabled to form a pretty correct estimate of his moral character.

In speaking of walking, therefore, I mean a graceful easy movement of the body, by which progression is performed. "The head should be upright, easy, and capable of free motion, right or left, up or down, without affecting the position of the body. The body must be kept erect and square to the front, having the breast projected and the stomach retracted, though not so as to injure either freedom of respiration or ease of attitude. The shoulders should be kept moderately and equally back and low, and the arms should hang

unconstrainedly by the sides—the balance on the limbs must be perfect—the knees should be straight, and the toes turned out—the weight of the body should be somewhat thrown forward, as this facilitates progression.

But though in progression the weight of the body should be somewhat thrown forward, it must be understood, that this requires a voluntary effort, and consequently a kind of occupation of the mind with the mere mechanical act of progression. This inclination of the body is therefore unfavourable to thought, conversation, and the expression of emotion and passion by natural gesture.

The moment, therefore, that these occupations of the mind occur, the body falls naturally into the upright position, and is placed more or less at ease from the inclination and restraint which are necessary in progression. Hence it is, that vain and imbecile creatures, incapable of thought, as the lads who become officers merely to wear a red coat with tinsel upon it, may in a moment be known by their senses and their will being evidently always and altogether directed to their

manner of walking, and to the adjustment of their persons. Such people are always weak-minded and worthless in all the duties of human life.

Running.—This being an exercise which requires for its performance a quick succession of muscular contractions, very soon exhausts the muscular energies, and, if continued beyond a certain time, produces exhaustion and fatigue.

Hence it is not so well adapted for convalescents, or those of a weak and delicate fibre, as the more gentle exercise of walking.

With ladies, running should not be indulged in in excess; it is altogether incompatible with their formation. In consequence of the size of the pelvis, women, during this act, are compelled to sway the body from one side to the other, in order to preserve their equilibrium, which renders their running waddling and awkward. Moreover, the shocks and percussions they receive during running are injurious to them.

In man, if persevered in, nothing is more likely to produce organic diseases of the thoracic viscera. We frequently meet with men, who, being

adepts in running, pride themselves on the fleetness of their feet. With them nothing is more common than diseases of the heart and lungs.

During running the involuntary muscles are thrown into an inordinate state of activity; respiration becomes quickened; the heart beats with violence; the blood circulates with the utmost rapidity; and the man at length becomes exhausted by too powerful a stimulus.

In running, man obeys all the laws of projectiles, in which the body is thrown violently forwards. It therefore may be described as a succession of leaps performed by one leg, whilst the other is carried forward to be placed upon the ground in order to perform the same office as the first.

Running, the same as walking, with certain acquisitions, may be performed gracefully and easily; but it is an exercise which we rarely see employed with judgment.

There are many who can scarcely run a few hundred paces without being out of breath, and unable to go further, because they perform that movement under a real disadvantage. Some, by

swinging their arms with too much violence, agitate the muscles of the breast, and thereby compress the movements of respiration; others, by bending their knees and throwing them forward, and by making long paces, fatigue themselves very soon, and also lose a great deal of time. Those who raise their legs too high behind, advance but little, though they labour very much. It is also very disadvantageous, whilst running, to throw the upper part of the body backward; to take too large strides; to press too hard upon the ground, and to respire too rapidly. To run fast and gracefully, one should, as it were, graze the ground with the feet, by keeping the legs as straight as possible whilst moving them forward, raise one's self from one foot upon the other with great velocity, and make the movements of the feet rapidly succeed each other. During the course the upper part of the body is inclined a little forward; the arms are, as it were, glued to the sides, and turned in at the height of the hips, the hands shut, and the nails turned inwards.*

* Elementary Course of Gymnastics, by Captain Clias.

PASSIVE EXERCISES.—These are exercises by which the body is moved by a power foreign to muscular contraction; therefore, correctly speaking, they cannot be denominated exercises. Their influence over the nutritive functions is slow and imperceptible at the time, producing action without much augmentation of animal heat or arterial excitement.

Passive exercises are particularly adapted for those invalids who labour under chronic diseases of a debilitating nature, consumptive patients, or those affected with derangement of the thoracic viscera.

The effects of passive exercises, although slow in developement, are more diffused; each and every organ in the body feeling equally their influence at one and the same time.

Passive exercises have a remarkable effect over the organs of nutrition, increasing strength and vigour without occasioning excitement,—raising no beatings of the heart, no overheating, nor producing perspiration.

Under this head I shall speak of those exercises

only which are in most frequent use; such as friction,—sailing,—swinging,—and riding. This latter is a modification of both active and passive; hence it may be regarded as of a more mixed character.

Friction.—In order that this should be effective, it must be performed with quickness, and in such a manner as to produce a degree of redness and heat on the surface. It is a most valuable auxiliary in the treatment of the disease under our present notice; I shall have occasion to allude to this again. The ancients employed friction as a tonic agent after cold bathing.

Sailing.—Independently of the impression its physical agents produce on the constitution of an individual, sailing itself influences the condition of different organs.

It is on the brain and nervous system that sailing makes its first impression, and from thence it is distributed over the whole system.

The symptoms of sea-sickness are perhaps so generally known, that it may be deemed superfluous to make any further allusion to them.

Every one who has taken a voyage at sea can doubtless bear ample testimony to the distress and horror attending persons in this state.

Sea-sickness first shews itself by a disposition to drowsiness, a listlessness, and inaptitude for exertion; the head droops on the chest, and a general relaxation of all the voluntary muscles ensues. The heart's action becomes diminished, the circulation languid, and the individual experiences a degree of chilliness over the whole surface of the body; the countenance assumes an ashy paleness; the features are altered—they become harsh and contracted, and have a vacant and unintellectual expression. These symptoms are quickly followed by those of reaction; the stomach becomes irritable, and discharges its contents; there is a momentary flush on the countenance; perspiration breaks out on the forehead and upper lip; the heat returns to the surface of the body, and the individual for a time experiences an alleviation from all unpleasant symptoms,—but only to again undergo the same distress.

This alternate action of excitement and depression has a tendency to do good, by ultimately establishing an augmentation of power in both the involuntary and voluntary muscles, by strengthening the heart's action, and thereby inducing a free circulation of arterial blood over the whole system.

This kind of exercise is peculiarly adapted for those who suffer from functional derangements of the thoracic viscera, and even in that indomitable disease, pulmonary consumption, has been known to strew flowers in the path to the grave.

It is not within my province at present to explain the remarkable consent or sympathy existing between the digestive and respiratory apparatus, nor the manner in which constant nausea relieves a congested state of the thoracic viscera, by determining to the surface of the body; it is sufficient to know, and experience establishes the fact, that a sea-voyage has palliated and relieved some of the most urgent and distressing symptoms incidental to consumptive patients.

Swinging.—I shall forbear saying much on this

exercise, it being merely a modification of the above. The exercise itself is purely passive ; but if the person swinging assist in the action, it is rendered more of a mixed character.

Swinging is not an exercise adapted for children in early life. If in daily use, they should not be allowed to indulge in it longer than from ten to fifteen minutes in the four-and-twenty hours. From the altered action excited in the brain, a too frequent and protracted use of swinging might induce disease in this organ.

Riding.—This embraces two kinds of exercise ; horse exercise, and carriage exercise. Of the two, the former partakes more the character of active, as it requires for its performance some degree of muscular power.

As it engages the upper part of the body, and occupies the arms and large muscles of the chest, which influence the motion of the lungs, it is most important, as soon as it can be borne. In taking horse exercise, also, something is due to the extent through which the person passes in the open air, and the absorption of the at-

tention by the scenery; for experience has demonstrated that mere horse exercise taken in a riding school, or within a limited space of ground, is not so salutary as riding in an open country. As a prophylactic of phthisis in those predisposed to that disease, riding has been justly extolled; and even when the disease has displayed itself, riding may be regarded as almost a specific; although we cannot accord in the opinion of Desault, that it tends to break down the tubercles, and to remove the accompanying obstructions of the liver; nor enter into the views of Salvidori, who directed his patients in the morning to climb some eminence until out of breath and bathed in sweat. I have often witnessed the beneficial effects of horse exercise in frames of body greatly weakened by asthma; and have seen individuals, who were scarcely able to mount on horseback, return from a ride vigorous and alert, and, by the daily renewal of this exercise, rapidly regain a degree of vigour and tone which could scarcely have been anticipated. When horse exercise or walking cannot be resorted to, the next best is carriage

exercise or sailing: but it must be recollected, that scarcely any of the influence of these can be referred to the muscular system.*

In carriage exercise something is due to the shocks and jolts which the body receives, from the unevenness of the ground, &c.; but more is to be attributed to the influence which change of scene produces on the mind, by moving about from one place to another.

This is a kind of exercise suitably adapted for all ages, both the young and the old, and is most adapted for convalescents, whose strength as yet will not allow them to indulge in those of a more active nature.

* Dr. A. T. Thompson on the *Materia Medica* and *Therapeutics*, 2d Ed., page 549.

SECTION XV.

Peculiar kinds of Exercises adapted for Lateral Curvature.—

Importance of examining the State of the Back.—Intercostal Muscles the first to be exercised.—Mode of exercising them.—Directions for exercising the Dorsal Muscles in the Erect Attitude.—Extension Motions.—Exercises with Mechanical Contrivances.—Indian Sceptre Exercise.—Treatment proposed by M. Andry.—Skipping and Jumping injurious.—Dancing recommended.—Exercise with the Ladder.—Exercise with the Pulley.—Description of an Instrument invented by Mr. Shaw.—Exercise with the Wheel.—Exercise with the Balance, &c., &c.

MANY ingenious modes of exercising the dorsal muscles have been devised by different authors and surgeons, who have directed their attention to the disease in question. I shall, therefore, merely content myself with enumerating a few of those which my experience has led me to adopt.

Previous to their employment, a strict investigation must be made as to the state of the

back; and should there be the slightest pain or uneasiness along the course of the spine, their use must be dispensed with, and the recumbent position enjoined. The easiest and most simple way of ascertaining whether any tenderness be present, is by the application of warm water along the vertebral column by means of a sponge. Should any inflammatory action be going on, an acute pricking sensation will be felt in the affected vertebra. Under these circumstances the gymnastic mode of treatment would be contra-indicated.

The first muscles to be put in action are the primary and accessory muscles of respiration. The patient must be placed erect, her hands grasping a transverse bar raised some distance above her head, and be requested to make repeated deep inspirations and respirations. This must not be carried so far as to produce fatigue. As there will be frequently an excurvation of the ribs on one side, care must be taken to prevent the full expansion and dilation of the lungs on that side of the chest. This may be effected

by simple pressure with both hands, one being applied to the posterior part of the chest, whilst the other makes counter pressure on the anterior part, the opposite side being allowed its full expansive power.

Mr. Bamfield, in allusion to the different kinds of exercises to be employed, observes, — In the erect attitude, the dorsal muscles can be exercised without mechanical aid, by bending the trunk backward and forward simply, or with the object of picking up and laying something down on the floor before the patient; or the patient may play or amuse himself with throwing and catching balls passed through two shoots fastened to stands, one of which is higher than the patient, and the other is lowered near the floor. The patient stoops to catch the ball, rolled by an assistant through the lower shoot, and then raises himself erect to roll it through the upper one.

The arms may be employed in exercising the dorsal and thoracic muscles, by the actions of throwing them forwards, of drawing the shoulders and arms backwards, and by rotating them.

These exercises of the arms I am in the habit of employing as preliminary to others. They are so arranged and varied as to form a sort of pleasing pastime to children. I shall, accordingly, introduce them here, as they are described by Donald Walker, in his “Exercises for Young Ladies,” under the head “Extension Motions.”

Attention !—The body is to be erect, the heels close together, and the hands hanging down on each side.

First Extension Motion. — This serves as a caution, and the motion tends to expand the chest, raise the head, throw back the shoulders, and strengthen the muscles of the back.

One.—Bring the hands and arms to the front, the fingers lightly touching at the points, and the nails downward ; then raise them in a circular direction well above the head, the ends of the fingers still touching, the thumbs pointing to the rear, the elbows pressed back, and the shoulders kept down.

Two. — Separate and extend the arms and fingers, forcing them obliquely back, till they

come extended on a line with the shoulders, and as they fall gradually thence to the original position of "Attention," endeavour as much as possible to elevate the neck and chest.

These two motions should be frequently practised, with the head turned as much as possible to the right or left, and the body kept square to the front.

Three.—Turn the palms of the hands to the front, pressing back the thumbs, with the arms extended, and raise them to the rear, till they meet above the head; the fingers pointing upwards, with the ends of the thumbs touching.

Four.—Keep the arms and knees straight, and bend over from the hips till the hands touch the feet, the head being brought down in the same direction.

Five.—With the arms flexible and easy from the shoulders, raise the body gradually, so as to resume the position of "Attention."

The whole of these motions should be done very gradually, so as to feel the exertion of the muscles throughout.

The patient being conversant with these, we may then have recourse to exercises performed with the assistance of mechanical contrivances, in order to give them more power and effect, and to induce a more powerful contraction of the muscles.

Of the various kinds of exercises thus made use of, I have found none so usefully adapted to our present object as those which come under the denomination of the “ Indian Exercise.” Dumb bells are not unfrequently had recourse to; but I object to them, from the inconvenient jerks they convey to the shoulders. They were first described in this country by Donald Walker, in the work before alluded to.

The sceptres or clubs, consist of two pieces of plain smooth wood, about two feet long, larger at their lower extremity, and hollowed, so as to furnish them with any convenient weight by means of small pieces of lead. These pieces of lead are kept within the hollowed extremity by a screw.

The different exercises, and mode of using them, are described thus:—



I. A sceptre is held by the handle pendant on each side. That in the right hand is carried over the head and left shoulder, until it hangs perpendicularly on the right side of the spine; that in the left hand is carried over the former in exactly the opposite direction, until it hangs on the opposite side. Holding both sceptres still pendant, the hands are raised somewhat higher than the head, with the sceptres in the same position; both arms are extended outwards and backwards; they are lastly dropped in the first position. All this is done slowly.

II. Commencing from the same position, the ends of both sceptres are swung upward, until they are held vertically, and side by side, at arm's length, in front of the body, the hands being as high as the shoulders. They are next carried in the same position at arm's length, and on the same level, as far backward as possible. Each is then dropped backward until it hangs vertically downwards; and this exercise ends as the first. All this is done slowly.

III. The sceptres are swung by the sides, first

separately and then together, exactly as the hands were in the last Extension Motion.

The new and more beautiful portion, now added from the Indian practice:—

I. The sceptres are held upright in front of the body, the elbows being near the haunches, and the fore-arms horizontal. The sceptre in the right hand is then carried over the head and left shoulder, dropping as low as possible behind, and returning to its first position. The same is done with the left hand; then with the right; and so on with each alternately. All this is performed with a swinging motion, so that the end of each sceptre describes a circle, which commences before the head, descends obliquely backward, and ascends again.

II. After carrying the sceptre in the right hand, from the same position around the head and left shoulder, as already described, it is stretched horizontally outward by the extended arm, and thence returned to the first position; the same is then done with the left hand; and so on with each alternately. The swing is here broken by the lateral extension.

III. The seepres, held chiefly between the thumb and first and second fingers, rest on the front of the arms, extended downward and slightly forward, and reach somewhat obliquely from the thumb and now inner side of the hands, of which the backs are turned forward to the outsides of the shoulders. That one held in the right hand is then thrown over the shoulder, and hangs downward behind it, while the whole of that side of the body is turned forward, the back and neck bent, so that the chin is raised and the chest thrown upward; and as the body is again turned to the front, that sceptre is drawn over the shoulder, and returned to its first position. At the moment in which the body reaches the front, however, the same begins to be done with the left hand; and so on with each alternately.

IV. This differs from the second only in this respect, that the arms act no longer distinctly, but together; their motions being blended by the left commencing as soon as the right has made its circle round the head, and forming its own

circle while the right is extending, and so on with regard to each.

V. This differs from the third chiefly in this, that the arms no longer act distinctly, but together; both sceptres, however, being kept down until the lateral turn is complete; both being then thrown over the shoulders at once, with the back and neck bent; and both returning gradually over the shoulders as the body passes to the opposite side.

VI. This is an exercise in which the lady crosses the apartment from side to side. The first exercise is here performed once with each arm, commencing with the arm of the side to which the freer space permits her most readily to go. Supposing this to be to the right of her first position, on finishing the second circle of the first exercise (*viz.* that with the left arm), and bringing it in front, both sceptres being thrown to the right side, are swung with extended arms to the left, sweeping with a circle downward in front of the feet, of which the left being at that moment lifted to perform a wheel back-

ward on the right toe, the face is turned opposite to the first direction; ground is gained by the left foot placing itself toward what was originally the right side; and the ends of the sceptres, without the slightest pause, continue their sweep upward to their first position. The same is only repeated; the lady remembering always to commence with the arm of the side to which she means to advance.

I might go on *ad infinitum* to speak of the different exercises performed with the sceptres, but I have selected the above, as they are described by Donald Walker, for the purpose of conveying some idea of the manner in which they are employed.

Another mode of exercising the dorsal muscles in the erect attitude, and from which obvious benefit has been derived in incipient lateral curvature, is to place a light weight on the head, so as to cause some exertion of the muscles of the back, to keep the head erect and prevent the weight from falling. This mode of treatment was proposed by M. Andry, in his *Orthopædia*, of

1723, from observing that milk-maids, and those accustomed in early life to carry heavy burdens on their heads, are never crooked. A very convenient plan, and one adopted by the late Mr. Wilson, is to place a small footstool inverted on the head; within the hollow between the feet of the stool, a few weights may be placed, varying from four to ten pounds. In this position, and with the spine perfectly straight, she should be instructed to practise military marching for at least ten minutes in the day. It is important that, whatever weights are employed, they must be adjusted on a particular part of the head, otherwise they have a tendency to do harm.

All skipping and jumping, whereby the body receives concussions or jerks, are to be avoided.

Dancing, as it is practised in the present day, I am accustomed to recommend, more especially should the deformity exist in the lumbar vertebra. I consider, the degree of activity into which the psoas and iliacus muscles* are thrown, is of ser-

* Muscles which pass from the lower part of the back to the thighs.

vice in assisting to restore the vertebræ to their natural site. It is, moreover, useful by causing a free circulation and distribution of blood and vital energy through the system generally; whilst at the same time, when judiciously and gracefully performed, it is void of those jerks and concussions conveyed to the body by skipping and jumping.

I abridge the following from a little work, lately come under my notice, by Mr. Dunn, teacher of dancing, Edinburgh.

“As a source of amusement and recreation, dancing calls forth the social affections, and exhilarates the spirits; and, resorted to as it chiefly is on festive occasions where all is mirth and gaiety, and where the accomplished dancer is looked on with admiration, it is no wonder that its acquisition should be praised.

The choice of a good teacher is an essential point towards the attainment of this art, as much mischief is often done in this, as well as in many other branches of education, by the unskilfulness of professors. As it is to be understood that the teacher is acquainted in the necessary degree with

the structure of his own body and limbs, and that he prosecutes his profession with a view to its physical importance &c., very scrupulous attention should be paid to the *exercises* which he points out for the purpose of bending and extending his pupil's legs, so that they *may assist the body in rising, and resist the weight when coming down.* The same strict attention ought also to be given to his instructions respecting the various positions and dispositions of the head and arms, and to all his admonitions and examples concerning carriage and deportment. Learners are generally negligent of initial rules, which they imagine are obtruded upon them; and they vainly think, that if they were only permitted to perform *a little at the first*, those rules and exercises might be learnt by-and-by! They are not aware of the error into which their miscalculations must certainly lead them. They ardently wish to obtain an end, but unfortunately they will not employ the requisite means. Parents are frequently much to blame in this respect; they are anxious to see their children do something, as they call it. It very often happens

that, during the teacher's instruction in the elementary and necessary arrangement of the body, limbs, &c. of his pupils, he is interrupted by a demand to know, why the young ladies and gentlemen do not *dance figures*? The greater number of these querists will not pay proper attention to the instructions of the teacher.

Ease and elegance of manner is what I have always been anxious to inculcate on my scholars. The height *of art is to conceal art*; therefore ease should accompany all the dancer's motions. Our admiration is reserved for the dancer, whose steps are firm, yet flexible and well-articulated—whose sinkings and risings are easy, soft, and unbroken, proceeding from a well-regulated employment of the strength and suppleness of the legs—whose body is erect without stiffness, well balanced, and possessing an elastic power of rising and yielding agreeably with the motion of the limbs—whose head is well set, and in perfect equilibrium. In conjunction with these acquirements, it is presumed that Nature has endowed the dancer with that feeling or sensibility of which I have already

spoken; for it is impossible to exhibit through the medium of the body what the soul does not feel. Thus accomplished then, while “*she floats through the mazes of the dance,*” the simple, distinct, and varied movements of her feet will be accompanied by an appropriate gesticulation of the body, head, and arms, rendering the *tout ensemble* a perfect combination of all that is beauteous and lovely; and then, and only then, can dancing be called “*the poetry of motion.*”

Another very convenient method of calling the muscles of the spine and chest into action, is the following:—

A ladder of moderate length, and possessing some degree of elasticity, is to be placed on an inclined plane, from the wall to the ground. The patient stands with her back to the wall, and grasping the staves with either hand alternately, she ascends in this way, with the whole weight of her body suspended and swinging by her hands. Having gained a certain height, she descends in a similar manner. This must be repeated until it produces some degree of fatigue, when it is to be discontinued.

Conjointly with this, I have been accustomed to make use of the following contrivance. Let a cord of some length be passed over two wheels, fixed in the ceiling, at a distance of about two feet, in a line with each other. To one extremity of the cord a weight must be attached, of a size adapted to the strength of the patient; and to the other extremity, a transverse bar. The patient grasps this bar; and using some force, draws it down, whilst the weight attached to the other extremity of the cord ascends to the ceiling. By gradually lessening the contractile power of the muscles, the weight again drops, and a slight assistance on the part of the patient will be sufficient to raise her from off the ground, suspended by her arms. These movements are to be repeated alternately until it excites fatigue.

For that condition of curve occupying the upper portion of the back or dorsal vertebræ, a very ingenious mode has been invented by Mr. Shaw. It consists of an upright rod, four or five feet high, and similar to the pole of a common fire-screen. In the upper part of the rod a small wheel is placed;

and about sixteen inches below the wheel a lever eleven inches long is *let in*, and moves upon a pin, —the opening in the rod being so cut as to permit the lever to rise and fall. To the end of the lever a certain weight is attached. This apparatus may be fixed by a small wooden vice to the table, directly opposite to the girl as she sits at her lesson or at her work. A riband, with a loop or ring in front, is to be put round her head; a silk cord is to be attached to the loop, and is then to be carried over the wheel in the rod, and to be fixed to the end of the lever, the cord being so adapted that, when sitting quite erect, the lever is raised as high as possible. As long as she sits erect, the lever being kept up, there will scarcely be any weight dragging upon the head; but if she stoops, or lets the spine fall to one side, then the cord is relaxed and the lever falls, and by the consequent increase of the power of the weight the force becomes considerable. To relieve herself from the constant pull, she is obliged to sit upright, and, by the exertion to counteract the force of the weight when it falls low on the scale, the

muscles by which the spine is naturally kept erect are strengthened. This instrument is very manageable. By moving the cord back upon the lever the force or weight will be much increased; while by keeping the cord attached to the end of the lever, and moving back the weight, the force will be diminished.

The muscles of the trunk and arms may be again exercised by the simple act of turning a wheel.

A wheel may be attached to a frame or door-post, and the patient remaining in one place, should move the body backward and forward with the progress of the wheel, care being taken that the arm on the concave side of the curve be alone exercised. This is more adapted for curvature of the superior vertebræ.

A very useful exercise for curvature in the lumbar vertebræ is the following:—

Two ropes of equal length are to be suspended from one fixed point in the ceiling, to the free extremities of which a transverse bar must be fastened of two feet in length. The ropes should

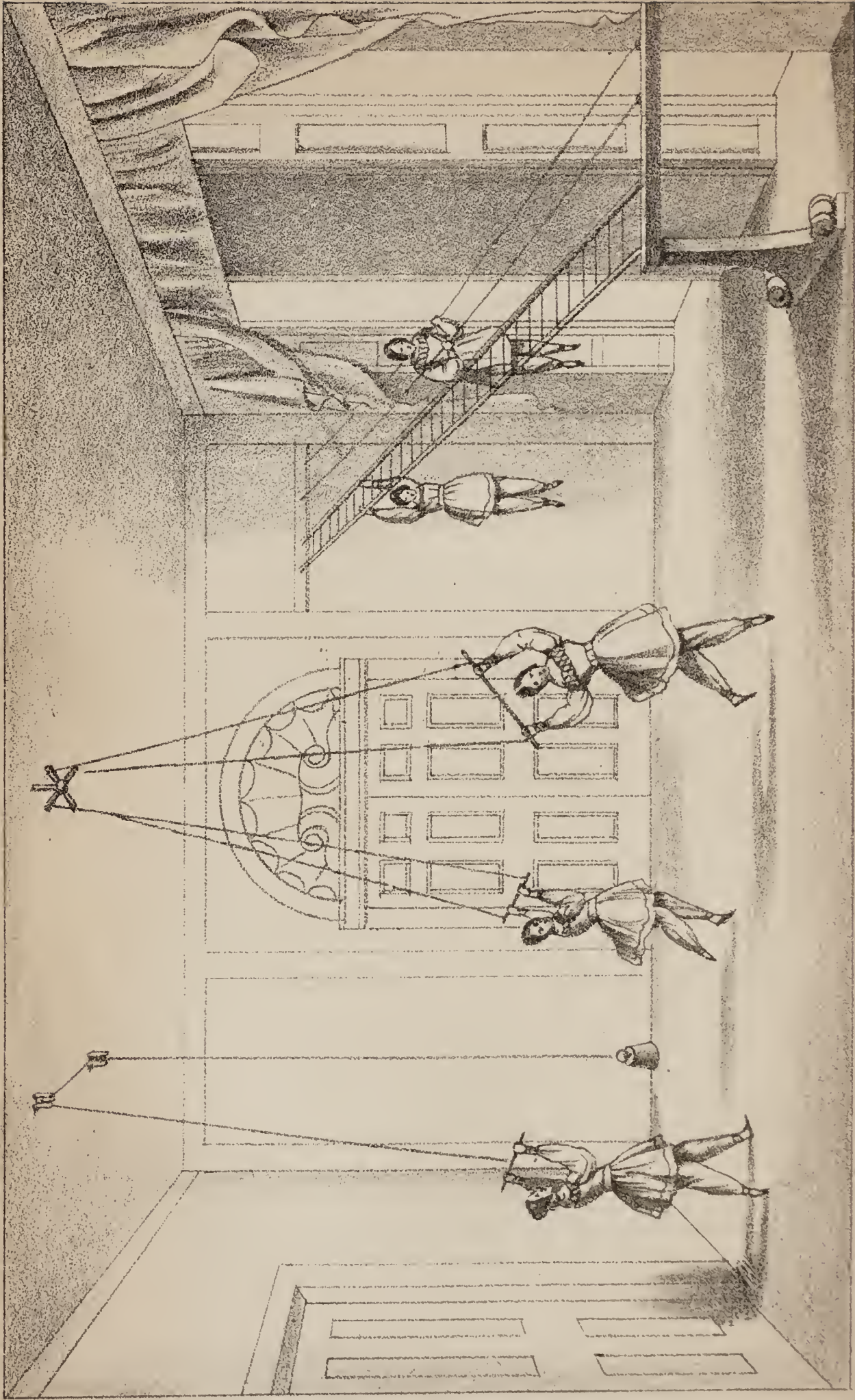
be long enough when suspended to reach as far as the chest. The patient must grasp with her two hands the transverse bar; and advancing briskly, and with a quick step, she is to proceed as far as possible, and stop only when the arms are extended at full length above the head. At that moment with the whole force of the body supported by the balance, one foot being in advance and the other behind, she is to drop slowly on the knee of the latter, and gradually rising, she is to retreat with the same pace. This should be again and again repeated, for at least ten minutes in the day.

By attaching a swivel to the upper part of the cords, the balance may be made to turn in any direction, and numberless exercises performed with this simple contrivance.

Another very simple mode of exercising the muscles, is by throwing an elastic ball, either against the ground or on the wall, and catching it alternately, first with the right hand, and then with the left.

Different exercises as performed with the rod

Plate IV.



or cane, are also useful adjuncts to those already described. The cane for this purpose should be light, smooth, and inflexible, and need not be more than four feet long.

1. The patient standing with her heels on a line, the body erect, the shoulders held back and of equal height, the chest thrown out, the head high and steady, holding the cane in both hands, the arms fully extended, she must raise it perpendicularly, passing it close to the body on a line with the shoulders, bringing it forward, the arms stretched; return the same backwards, raising it above the head, the arms extended; then let it descend on the shoulder, raise it again in the same manner, and return to the first position, making the same movements.

2. The patient standing in the same position, she must raise the cane, going through the same movements, bringing it above the head, the arms extended, must lower the left arm all its length by the left side, and at the same time bend the right arm, resting the cane against the shoulders, then

raise it and repeat the same movement on the right side; this being done, she must bring it forward, passing it above the head, holding the arms stretched and on a line with the shoulders; then bend the right arm, bringing the extremity of the cane under the left arm-pit, and return to the first position, repeating the same exercise with the left arm.

3. The patient standing with the right arm held up and the left down, she must pass the right above her head, bringing the cane backward against the shoulders, the right arm bent and the left extended; then return forward, repassing the right arm above the head, take her position and make the same movement with the left arm.

4. The patient standing in the same position, she must pass the cane above the head, beginning with the right arm; let it descend backwards against the shoulders; then let it slip to the right, the right arm extended and the left bent; repass it above the head, taking her position, and repeat the same exercise, beginning with the left arm.

5. The patient standing with the arms stretched,

and on a line with the shoulders, she must make the cane turn forward and backward round her body without moving it, always keeping the arms stretched; she must begin the exercise by the left side, moving to the right, and then from the right to the left, in order that the shoulders may be moved in every direction without altering the position of the body.

6. The patient holding the cane horizontally, the right arm held up and the left down, she must pass the right arm above her head, letting the cane slip backward along the back, stretching the arm; the cane must be held between the thumb and forefinger; she must then raise it again above the head, and return to her position, executing the same exercise, beginning with the left arm.

7. The patient standing as before, must pass the cane above and behind the head, beginning with the right arm; let it slip to the right, extending the same arm and bending the left; she must repass it in the same manner above the head, bringing it forward and to the left, opposite the shoulder, the left arm bent, on a line with the

eyes; then raise it above the head: the same movement is to be performed on the right side.

It will be impossible for the patient to perform these exercises with promptitude and regularity, unless great pains are bestowed in learning them. Time, and a frequent repetition of them, are the only means by which they may be correctly acquired. The greatest care and attention must be taken, that in performing these exercises the patient does not twirl or writhe the trunk, for in so doing their remedial effects will be counteracted.

Children with incipient curvature should be incited to the exercise of their muscles, by forming for them different kinds of amusements and games. Hunt the Slipper—Le Diable Boiteux—La Grace—battledore and shuttlecock—trundling a hoop, &c., may be all engaged in with advantage. In this latter amusement care must be taken that the hoop be beaten with the arm opposite to the side on which the curve inclines.

With very young children it will be difficult to devise means by which the dorsal muscles may be

exercised. With them the passive exercises, as friction, shampooing, &c. &c., should be daily employed along the course of the back.

All the apparatus of leading-strings, and those means for suspending children by the arm-pits, in order to induce them to *run away*, are highly injurious. *Crooked legs*, deformities of the chest &c., are the frequent results of these foolish practices.

The exercise best adapted for children is that which they are allowed to take upon a mat or large carpet spread upon the ground, with their muscles unconfined by any of those wrappings in which children are usually surrounded, and covered only with a loose frock or night-gown. In this position, and thus dressed, they should be allowed to exercise themselves, by turning backwards and forwards, as fancy prompts; or by placing playthings before them, and occasionally moving them a little beyond their reach, they will receive fresh inducements to exercise their muscles, by the constant attempts to get them within their grasp.

It is impossible to lay down general rules for the duration of exercise; the surest indication for discontinuing them is a sensation of fatigue and weariness.

Whilst these feelings remain, the patient should on no account be permitted to sit or stand erect, but immediately have recourse to the recumbent *facial* position, and thus remain until they have subsided.

For patients to perform these exercises in their ordinary dress will be impracticable. Every article of clothing must be loose and unconstrained, so that the muscles and limbs may have a free and uninterrupted movement. On the other hand we must avoid the opposite extreme, and not have them made so large as to embarrass by their looseness.

The dress best adapted for these exercises, and which I have been in the habit of recommending my patients, is made by Mrs. Bridges, of Hercules Buildings, Lambeth; it consists of a simple frock and trowsers, the former of which does not extend below the knees. Every portion of the body, and

particularly that which extends across the chest and encircles the shoulders and waist, is worked in such a manner that, by extension, it may be made to yield in all directions to double the length it is when this power is removed. The trowsers are fastened to the waist-band by means of buttons, and the ankles are encircled by bands of the same elastic nature.

The principal feature in the formation of this dress is, that it fits closely to the form, having a most genteel and light appearance, whilst at the same time, being elastic, it yields to all the motions of the body, allowing the muscles a free and unconstrained movement. This kind of dress is particularly adapted for all kinds of exercise, especially the Indian exercises, for which it was constructed. *See Plates.*

After exercising, care must be taken lest a sudden check be given to the perspiration which frequently bedews every part of the body. Should this be profuse, a change of linen will be requisite; and, after thoroughly drying herself, by

rubbing the skin gently with a warm rough towel, the patient may then retire to her couch with safety.

SECTION XVI.

On the proper construction of Corsets.—General views on the present state of society.—Dress may be made to improve or injure the figure.—Applicability of this observation to the make of Corsets.—Great ingenuity and judgment required in the make of these articles.—Practices of Barbarous Nations.—Construction of Corsets has occupied the attention of the most learned Surgeons and Anatomists.—Necessity of affording support to the Female Form.—Author's views on the use of Whalebone Stays.—M. Portal's observations.—Decree of Joseph II.—Observations on the best description of Corsets.—Superiority of Mrs. Merriott's Stays over all others.—General form of Mrs. Merriott's Stays.—Author's inducements to recommend them.—All possibility of Tight Lacing obviated by the employment of these Corsets for Young Ladies.

MAN enters this breathing world amidst suffering and sorrow. From the moment in which he draws his first breath, disease and sickness assail him on all sides, in the most countless and protean varieties of form.

If he escape the diseases of infancy, youth and maturity engender others of an equally formidable nature.

In addition to these inflictions of Nature, the habits of society generate new evils, which perhaps exceed their precursors in number and virulence.

The inheritance of disease, aggravated as it generally is by the casualties to which mankind are exposed, would, it might be thought, be a sufficient check to that insatiable desire for evil, so prevalent amongst society of the present day; but candour compels me to state, that such is not the case, and so blinded and infatuated are the mass of human beings, so enthusiastic are ladies of the present day in their devotions to the goddess of Fashion, that, to be ranked amongst her votaries, they are ready and willing to immolate at her shrine every boon Nature has conferred on them.

The mass of human suffering is not deemed sufficiently burthensome, but the more fortunate classes of society seem, with an insane disinterestedness, to resolve that their children and themselves shall not suffer less than their humble

neighbours. Fashion steps in to equalize the weight of calamity, and a perverse ingenuity discovers, that to the more obvious adaptations of dress to the purposes of clothing and ornament, another may be added. Dress may defend from cold, and may be made the means of displaying taste or splendour; and it may be also used, and it is used, as one of the readiest and most powerful means of destroying the health, beauty, and symmetry of the human form.

To no one article of female attire are these observations more truly applicable, nor their truths more forcibly impressed, than in the unscientific make of corsets. More ingenuity and judgment is required in the make of stays, than any other article of female attire.

In China the natives cripple the feet of the females; the Africans flatten their noses, as an indispensable requisite of beauty; in other countries the human head is squeezed into shapes the most unnatural, and such as are consonant with their barbaric taste. In England the *outside* of the head enjoys a tolerable degree of

immunity; with the feet we dabble in a small way; but with the waist—

“ Ay, there’s the rub”—

the grandest efforts of our mischievous skill are expended upon the busts of our females. Nature intended that beauty should sit there enthroned: we vote nature a bungler, and frequently contrive, by means of stays, articles of dress, and a careful system of nursery and scholastic discipline, to rectify those forms which have been ascribed to her errors.

Having in a previous section pointed out the evils arising from an improper use of stays, I propose in this making some observations on the proper construction of this article of female attire.

The most learned surgeons and anatomists have not considered this subject beneath their notice. Soemmering has devoted a considerable portion of his work to this subject; and Camper, the celebrated Dutch anatomist, particularly dwells on the evil effects arising from the employment

of the inelastic, unyielding stays which were in use in his time in Holland. In our own time Mr. Coulson and others have dwelt largely on this subject.

Under the protection of such high authority, and in such a treatise as this, it would be an unpardonable piece of affectation, were I to omit pointing out the proper construction of this article of female attire.

It is probable that the necessity of supporting the figure in domestic duties and in the ordinary pursuits of life has compelled ladies in all ages to use some kind of stays or cincture. A custom, therefore, of so long standing it would be vain in me or any other medical man to attempt abolishing; it therefore only remains to point out such a construction of this now almost indispensable article of dress, as will prevent those evils to which I have before alluded.

Stays which are constructed with whalebone and steel are highly injurious, and sooner or later produce the most disastrous results. M. Portal, one of the most distinguished physicians of

France, in allusion to these articles, observes, that where women who have worn whalebone stays from infancy leave them off at a certain age for greater comfort, they are sure to become distorted; for the muscles have become so weakened by want of use, that when the artificial props are removed they are no longer capable of supporting the body.

In the “*Dictionnaire des Sciences Médicales*,” we find the following article:—

“ Joseph II. attempted to abolish the use of whalebone stays in his kingdom. He issued an imperial decree, forbidding the wearing of any stays whatever in orphan asylums, convents, and institutions devoted to children of the other sex; and in order to throw contempt on this article of dress, the emperor decreed that women condemned to punishment in the public works should wear stays and carry hoops.”

The pressure of stays on every part of the chest should be slight, elastic in front, and yield to all the motions of the body.

The object of corsets is gently to support the

figure without diminishing the freedom of muscular motion. That portion extending across the chest must afford support to the breast, without displacing them, or producing unequal pressure.

In forming the seams for this purpose, care must be taken that they are made sufficiently long to obviate any unnatural protuberance of the breasts; should this not be observed, deformity is the infallible result.

That portion of the stays situate between the breasts, and on either side of the lace holes, must be made of materials sufficiently elastic to yield to all the movements of the arms, to allow the bosom sufficient play during respiration, and to obviate the possibility of tight lacing.

Aware of the great importance of these principles, I have been induced to examine minutely a variety of corsets which have been brought for my inspection.

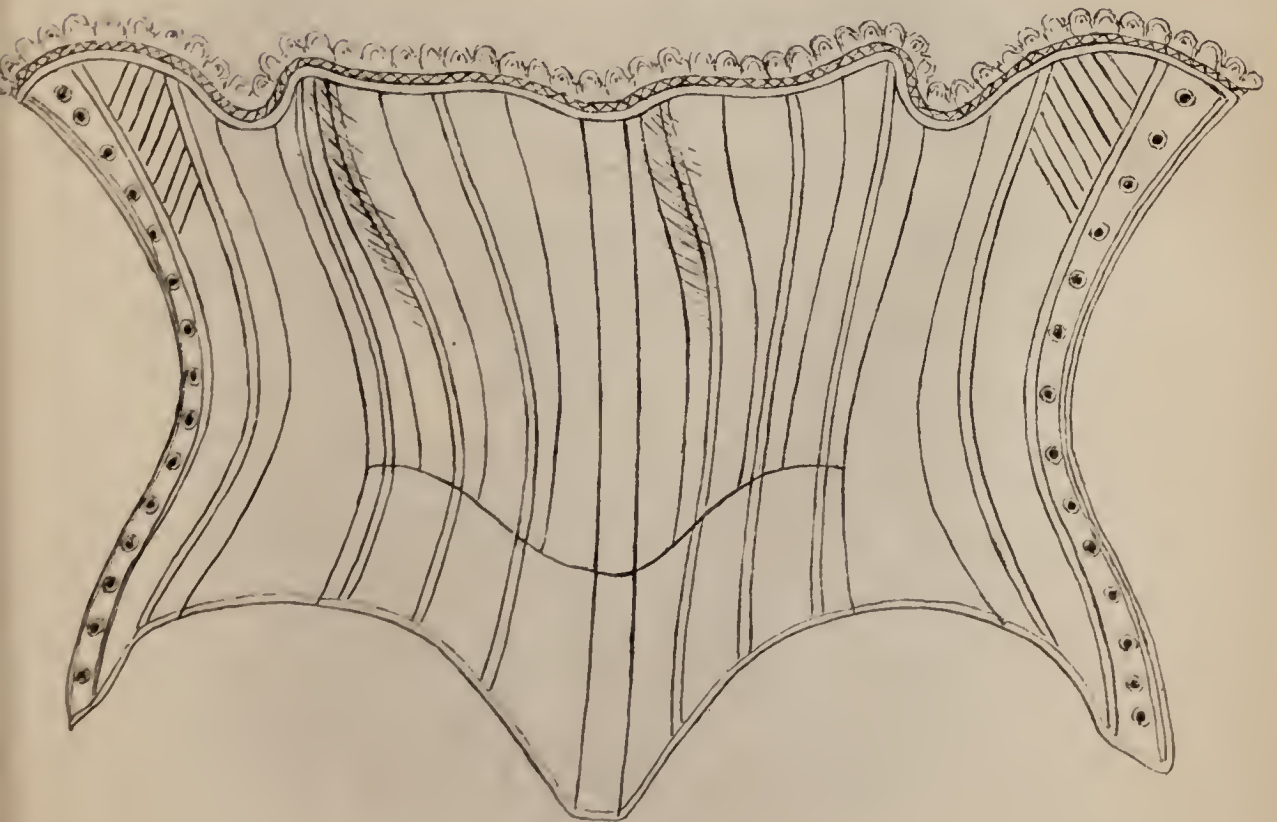
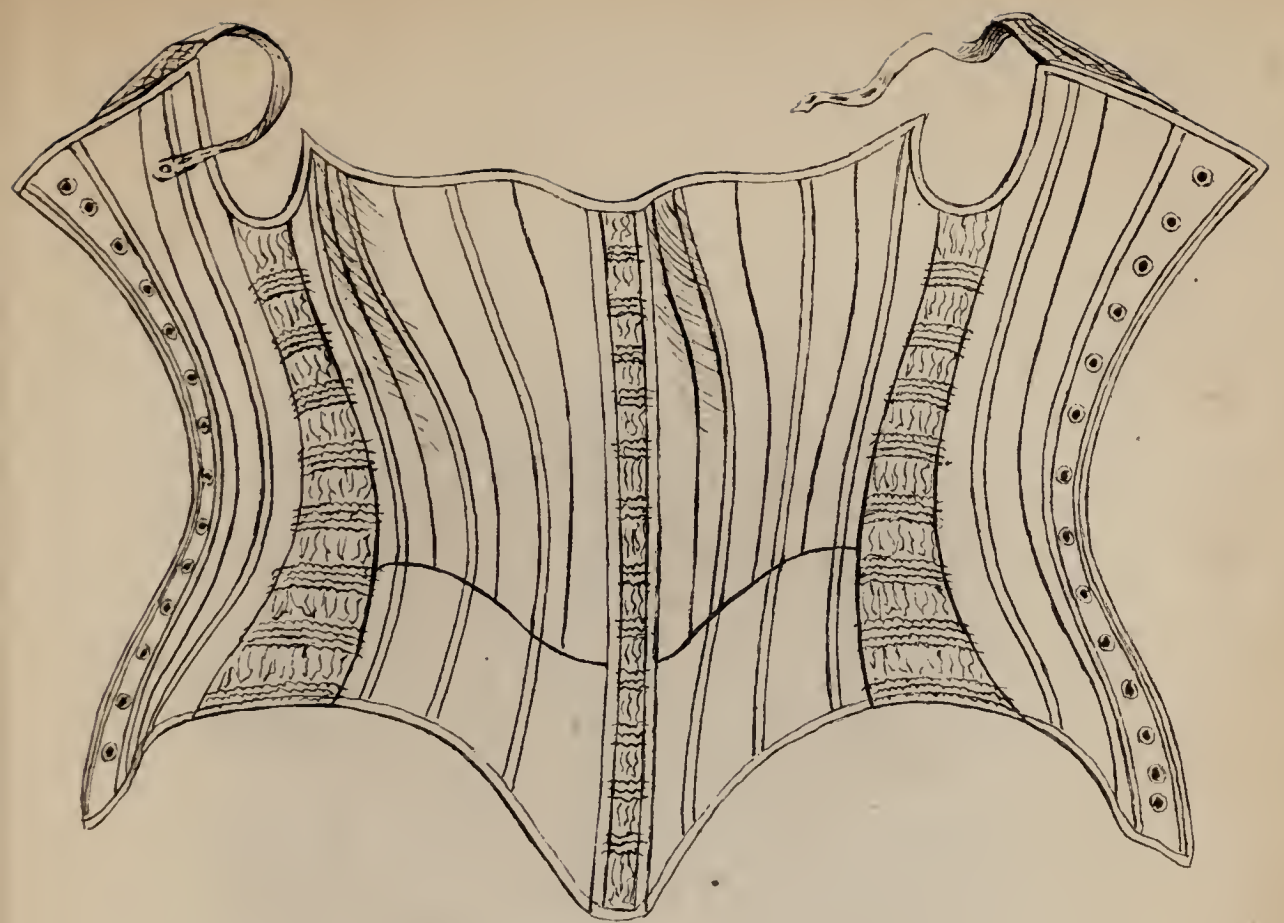
These objects appear to me more completely answered by the stays of Mrs. Merriott, No. 3, Wigmore Street, than by any others which I have yet seen.

By the judicious arrangement of their seams, the proper application of elastic materials, and the superiority of their workmanship, they afford the necessary degree of support to the figure without exerting any baneful pressure on the body — producing a graceful and symmetrical roundness in the waist, and displaying the beauty of the female form to the greatest advantage.

Mrs. Merriott's stays are formed of several longitudinal portions, extending from the top to the bottom on the sides, and in front to about a fourth of the inferior part. This space is occupied by one entire piece, which fits closely to the form, and affords the most comfortable support to the lower part of the stomach. *See Plate IV.*

Mrs. Merriott remarks, that when the longitudinal slips are carried beyond the part alluded to, however well the stays may be adapted to the chest and upper part of the trunk, they never sit comfortably about the abdomen or stomach ; but by their creasing produce an evidently unpleasant—and, to single ladies, *doubtful*—appearance.

That portion of the stays in which the busk is



generally worn, is, by the peculiar nature of its workmanship, made sufficiently firm to afford every necessary degree of support, whilst, by the inlet of transverse elastic bands, it yields to all the movements of the body. The space occupied by the chest, across the hips, and on either side of the lace holes, are furnished with bands of the same elastic nature. The shoulder-straps are made to pass over and fit closely on the top of the shoulder; instead of being loose and constantly slipping over the arm, by being made elastic, they remain firm in their position, without occasioning any restraint or inconvenience.

I have been induced, therefore, to recommend Mrs. Merriott's stays in preference to any others now in use.

To parents, and those on whom the protection of young ladies devolves, I would recommend these corsets, as, from the particular arrangement of their elastic materials, all possibility of tight lacing is obviated.

This is a most desirable feature, as young ladies at a certain period of life bestow much

time and attention in reducing their waists to within the smallest possible dimensions.

By strictly enjoining the use of Mrs. Merriott's corsets, these attempts will, to a certain extent, be defeated, whilst at the same time every necessary support is afforded to the form.

SECTION XVII.

Treatment by Extension.—Mode of Treatment already advised effectual without having recourse to this.—Obstinacy with which some cases resist our efforts.—More progress towards cure during the first months.—Age at which we may expect most relief.—Impossible to establish on any fixed data the amount of time required in aggravated cases.—Means to be resorted to for ascertaining the State of the Back.—Importance of examining the Back before adopting the Gymnastic Treatment.—Treatment in incipient cases simple.—Importance of attention to the Causes of Curvature.—Forms of Exercise to be used in incipient cases.—Back boards &c. to be dispensed with.—Observations on the Reclining Boards used at schools.—A new description of Prone Couch.—Its Construction not adapted for the Upper Curve.—Cases in which Extension is to be employed.—Manner in which Extension is employed by some.—Author's Views.—New description of Extension Couch.—Advantages attending this mode of Extension.—Extending force to be increased gradually.—Great caution required in using Extension with Children.—Useful addition to the Prone Couch.—Directions for the Nurse or Assistant.—Directions for the Patient.—Importance of Pressure during Extension.—

The manner in which Pressure must be employed.—The same caution requisite during Extension, as during the employment of Exercise.—Treatment with Ladies at certain periods.—Tepid Bathing recommended.—En Douche, &c. &c.—Our prospects of cure materially influenced by the Patient.—Concluding Observations, &c. &c.

IN incipient cases of curvature, the plan of treatment laid down will generally suffice to remove all traces of this affection ; but should it not yield to this course, or should the curve be of longer standing, or be passing into its second and third stages, we must have recourse to other means.

On being consulted by a patient affected with curvature, I can generally form a pretty correct estimate as to the amount of time required, and the means to be adopted for its removal ; still, in advancing this opinion, I should not wish it to be understood that I do so with the exclusive right and privilege of one whose conclusions are infallible.

Not only patients themselves, but their medical attendants, are frequently disappointed and baffled by the obstinacy with which these affections resist

every means of cure. The only remedial measures in these cases will be time, and the most unceasing perseverance in the means adopted.

I have generally remarked, that more progress towards cure is made during the first few months, than afterwards. This should not repress our endeavours, but, on the contrary, be an incentive to renewed and increased exertions.

The age at which we may expect to afford the most relief, is during the growth of the body; at this period nature co-operates with us in our endeavours, and assists in replacing the distorted vertebræ.

In protracted cases, it will be impossible to establish on any fixed data the amount of time the surgical and mechanical means must be persevered in. This must depend on the disposition of the patient and friends to pursue the plan of treatment laid down.

In temporary or incipient cases, from three to four months steady perseverance in the recumbent position, the employment of exercise, friction,

manipulation, &c., &c., will generally suffice to remove all tendency to this disease.

If by placing the patient firmly on the feet, with her arms folded across the chest, and directing her to bend forward, we find that the displaced vertebræ are gradually brought to the mesial line of the back, the most favourable results may be anticipated. But if, on the contrary, neither this movement nor our efforts by extension are effectual in changing the position of the spine, the issue will be doubtful, and the patient should not be buoyed up with any fallacious hopes of perfect recovery.

In cases where pain and tenderness along the course of the spine exist, it will be requisite to enjoin a strict observance of the recumbent position, together with friction and shampooing for a month or two previous to the commencing the gymnastic treatment.

The treatment in incipient cases of lateral curvature is very simple. Our attention in the first place must be directed to those causes which have induced the disease. Should it have arisen from too close a confinement to the nursery or school

room, this must give place to a more active employment of bodily exercise, alternated with the recumbent position.

Should it have originated from the change effected in the muscles by the abuse of stays and tight lacing, the sooner these pernicious practices are abandoned the better ; otherwise all attempts to rectify the state of the back will prove abortive, and the individual in after years will become a living monument of self-persisted obstinacy and folly.

Should it be induced by any of the mal-positions already spoken of in the different attitudes of life, every effort must be directed to their removal : if from the habit of sleeping two in a bed, or sitting on one side of the fire-place or window, the patient must immediately change her position, and sleep on the opposite side.

Should it have arisen, as it frequently does with girls about the age of ten or twelve, from the practice of lifting and carrying infants on one arm, this must be put a stop to, and the plan of military marching as already described be adopted.

The Indian exercises may be used with advantage, and with every prospect of success. The balance—the ladder—the pulley—the cane, &c. are alike equally useful in their turns.

Back-boards, steel stays, steel collars, and spinal supports, are to be dispensed with, and the muscles of the back allowed a free and uninterrupted movement.

It has been a matter of consideration amongst medical men, what description of couch would be most desirable for an observance of the recumbent position, some recommending the simple inclined plane, whilst others recommend couches of a more complicated nature.

In reference to the reclining boards, so frequently used in schools, and amongst families, I must condemn them, from a conscientious conviction of their inutility and worthlessness. I have not within my recollection a case in which they were ever employed with advantage, but, on the contrary, opposite results are the most frequent demands for their discontinuance.

The description of couch I most frequently

employ, and which has been before alluded to when speaking of the facial position,* is exhibited in *Plate VI., fig. 1.* This will be found sufficiently adequate to fulfil every indication required, during the first stage of lateral curvature. Should the curve occupy the lower portion of the back, by the adaptation of a windlass to the foot of the couch, and fixing the upper portion of the trunk, we are enabled to keep up every requisite degree of extension. *See Plate.*

From my experience in the use of this couch, I have observed that its construction is not so well adapted for that description of curve which occupies the dorsal vertebræ, and in which there is that morbid growth of the ribs already spoken of. In these cases I have found my extension couch (*fig. 2.* in the same plate) a most effectual adjuvant to the other means described.

In cases of a more aggravated nature, and where the second and third stages have commenced, the recumbent facial position is indispensably requisite; but we must not rely solely on this, as our prospect

* See Section IX., page 74.

of success will materially depend on the degree of mechanical extension and manipulation we employ.

There have been various means suggested for effecting this most desirable end. Some medical men condemn *in toto* the application of mechanical contrivances for extending the spine; but, conscious of the inefficiency of all other remedies, in the more aggravated forms of this complaint, without some assistance of this kind, they steer a middle course, and rely on their own physical strength, as being least repulsive to the sensitive feelings of the patient. The mode in which they employ extension is by pulling at the feet, whilst an assistant grasps the wrists and is employed in extension in the opposite direction.

Now, from my own personal experience, this plan of using extension is productive of no other results than that of pain and torture to the patients.

By employing this mode of extension we are prevented from exerting a direct influence over the spinal column, and the strength of the assistant is exhausted in subduing the powerful

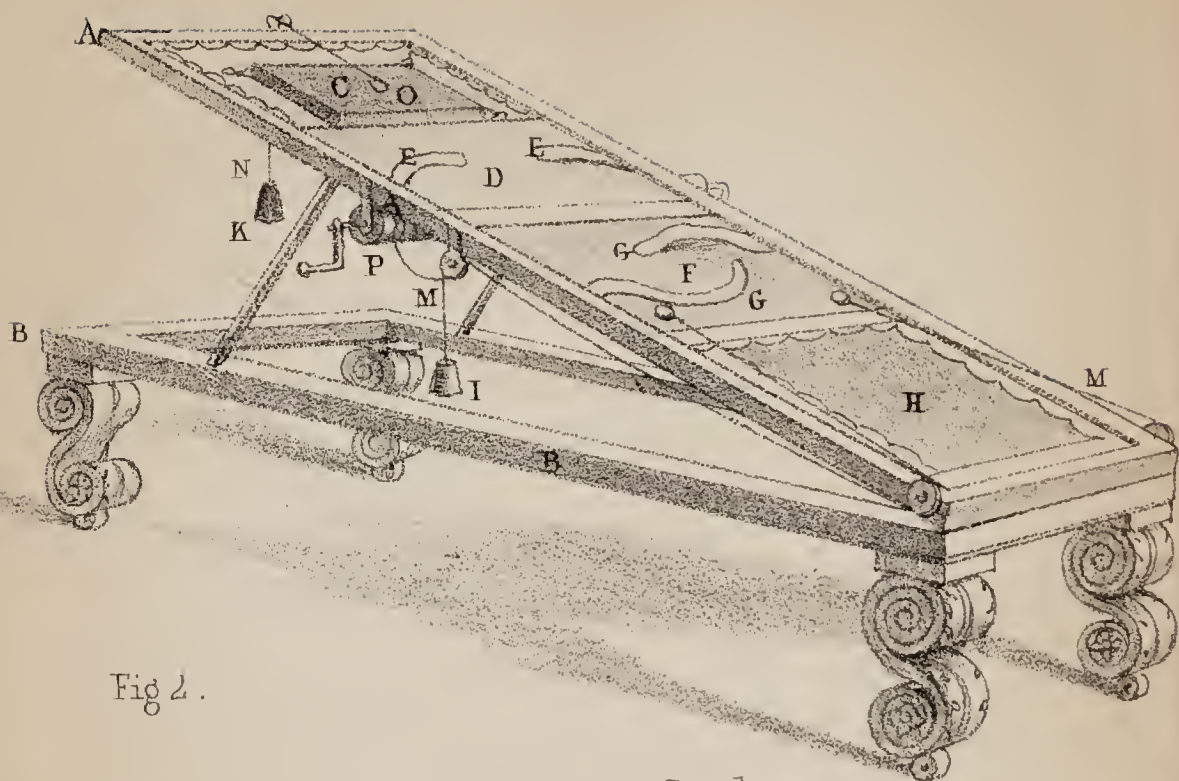


Fig 2.

Extension Couch.



Fig 1

Prone Couch.

resistance afforded by the numerous muscles surrounding the hip and thigh.

Conscious of the inapplicability of this mode of extension, and aware of the importance of preserving a gradual and uniform extension of the spinal column, I was induced to turn my attention to the construction of such a couch as would effect this with the least possible inconvenience or pain to the patient.

It consists of an inclined plane, A A A, placed upon a frame or stand, B B B. By the adjustment of the two uprights, c, D, which are attached by hinges to the stand B B B, into the notches on the under surface of the plane A A A, we are enabled to raise or lower this to what angle we wish with the stand B B B. The upper fourth of the couch is cut out, and the sacking, c, let in, for the purpose of forming a hollow, in which a pillow may be placed for the head to rest on. That portion on which the chest reclines, D, is fixed, and has attached to it the straps E E, for the purpose of passing beneath the arms, and preventing the body from slipping down.

That portion of the couch marked F is moveable, and need not be more than eighteen inches long; to this the pelvis must be firmly fastened, by means of the straps G G. The space marked H must be supplied with sacking, similar to C, for the reception of the feet and legs. The head is to be attached to the hook O, through the medium of bands which pass beneath the chin, and around the occiput. Thus placed on the couch, the weights I I K are then to be appended to the cords M M and N.

In consequence of the heaviness of the body and the weights I I, the board F will be pulled downwards. When this happens, the whole vertebral column is put on the stretch by the resistance afforded by the weight K, attached to the head, and the straps E E, which pass under the axilla and encircle the upper part of the chest. In this manner the whole length of the spine may be put on the stretch two or three times a day. As it would be inconvenient to keep the head constantly attached to the cord N, it may be released, and the chest and pelvis allowed to remain fastened.

By removing the weights I I K , and attaching the cords M M and N , to the windlass P , we may increase our powers of extension to any amount we wish.

When the weights remain on, the amount of extending power will be in an inverse ratio to the height we raise the platform.

The great advantage attending this mode of extension is, that the force acts in a gradual manner, whilst the extension may be permanent without producing any pain or inconvenience to the patient. Moreover, by the efforts the patient makes to raise the head, it forms a most useful exercise for the muscles situated on the upper part of the back. *See Plate, fig. 2.*

It was formerly the practice to apply the extending power to the extremities; but, for reasons already alluded to, we are prevented from making that direct extension of the spinal column which forms so essential a desideratum in aggravated forms of this disease.

In cases of incipient curvature of the lumbar vertebræ, the exercise of swinging from a ladder,

as before described, will perhaps extend the spine sufficiently; but where the curve is situated in the dorsal vertebræ, or occupies the whole course of the spine, this will be of no avail, and our only resource will be to use the head as a fixed point.

It will be impossible to lay down any fixed rules as to the amount of force to be applied; this depends so much on the peculiarity of the case. As a general principle, it will be advisable to increase our extension gradually, and with the utmost caution.

I am particularly wary in recommending extension with children, as from the extreme delicacy of their constitutions I am apprehensive lest some mischief may arise from the strain on the muscles. The best treatment for them will be to keep on the prone couch, allowing them to be up only at such times as they employ the exercise recommended.

A very useful addition to the prone couch may be made by the application of a wheel on either side the horizontal plane, which the patient should

be induced to turn as frequently as possible, thus exercising the muscles of the upper part of the trunk whilst in the recumbent position. *See Plate VI., fig. 1.*

An hour or so previous to the accustomed visit of the medical attendant, the assistant or nurse should use friction along the course of the spine, either with a flesh brush or the hand, taking care to sprinkle the back well with powder or flour, to prevent abrasion. This must be employed quickly and lightly, and be continued sufficiently long to produce a degree of heat and redness on the skin.

The patient herself, previous to this, must go through the regular course of exercise her medical attendant may think fit to advise; after which she must resume her position on the couch, and wait patiently until his arrival.

During extension, pressure is to be made by the hand on every projecting part, and in doing this we must follow the action of respiration. The spinous processes of the displaced vertebræ, either individually or collectively, should be

gently directed towards the mesial line of the back, by manual force and dexterity.

Should the ribs be involved in the projection, the utmost care and attention must be bestowed on the manner and direction in which this pressure is employed, for by an unskilful management of the operation one evil is remedied at the expence of saddling the patient with another.

The same caution is required in the employment of extension as in the employment of exercise. Every vertebra must become the object of our most serious attention. To be content with examining the back only once or twice before adopting any radical measures, is highly culpable.

Patients, from the degree of nervous excitement naturally attendant on the consultation of a strange practitioner, frequently evince the most acute sensibility, and it is only to ask the question and pain is immediately referred to and felt in the spot mentioned.

After the most assiduous and attentive examination, should it be found that the patient experiences a degree of pricking or aching sen-

sation in one or more of the vertebræ, the treatment by extension must be relinquished until these symptoms have at least disappeared; we may then, in the most cautious manner, have recourse to the means pointed out.

Should a young lady have arrived at a certain age, there are times in which all exercise, extension, friction, manipulation, &c., &c., are to be suspended. During this period she is particularly to observe the recumbent position, and avoid every thing of an exciting or irritating nature; the room is to be kept at an equal temperature of between 60 and 70 degrees; and all stimulants and active medicines avoided.

During the summer months the patient should have recourse to tepid bathing, which may be gradually reduced to cold. For these affections no bathing will be found so efficacious as the application of a stream of cold water along the course of the spine, either in the form of the *douche*, or by means of a tea-kettle or funnel placed on the back part of the head. In the winter months, and during cold weather, this may

be superseded by conducting an electrical current along the course of the spine for about a quarter of an hour every other day.

In the treatment of these affections our prospects of cure are materially influenced by the spirit and perseverance with which our plans are pursued both by the patient and her friends. To expect or promise immediate relief, will only lead the patient into disappointment, and the practitioner into disgrace. Conscious of this, I always consider it my duty distinctly to state my views as to the amount of time &c. required; and if, after this, they are willing to devote the necessary degree of attention to the improvement of their figure, no disappointment can ensue from any injudicious promises on my part.

The delight and happiness which a keenly sensitive mind must experience on finding herself once more restored to her natural shape and figure, to once more become a participator in the enjoyments and pleasures of that society from which she has been so long secluded, more than

amply repays for the many months of care and attention she has bestowed.

The most favourable results may be anticipated if the means pointed out be employed during the earlier stages. The longer the parts are allowed to retain their unnatural position, the difficulty of restoring them is increased.

It is the height of folly not to interfere with these affections under the vague impression that children will *outgrow* them; the equilibrium of the body once lost, all natural efforts to restore it unaided by mechanical means are of no avail; and as the individual grows, so these deformities are increased and aggravated.

That the weight of these observations may be more forcibly impressed, I would direct attention for a few moments to the direful evils which must necessarily arise from neglect in these cases. It will prove an insurmountable barrier to their advancement in life—it will cut them off from becoming useful members of society, by drawing down the neglect and indifference of their fellow-creatures — it will be a bitterness and remorse to

them in after years, and a source of unavailing regret. They carry about with them that which, palpable to every eye, is an incessant torment to their own ;— every hope, every pleasure, every design is blasted and thwarted by the most gloomy reflections. They will pass through this world as beings distinct from every social link, with a life unchequered by any of those ties and affections which reflect so bright a tinge upon its varied stream, cheering us through its turbulent course, and inspiring us with redoubled energy to oppose and surmount the many difficulties which continually beset us.

In speaking thus energetically, I trust it may not be thought I paint too strong a picture ; but

———— “ What is writ, is writ—
Would it were worthier ! ”

FINIS.

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DESCRIPTION OF THE PLATES.

PLATE I.—*Figs. 1, 2, and 3*, represent Lateral Curvature of the Spine in its three different stages.

PLATE II.—*Figs. 1 and 2* shew the natural form of the waist; also an unnatural one, the result of tight lacing.

PLATE III. shews various forms of Exercise, as performed with the Indian Sceptres.

PLATE IV.—Peculiar forms of Exercise adapted for Lateral Curvature of the Spine.

PLATE V.—Mrs. MERRIOTT'S Corsets.

PLATE VI.—*Fig. 1* represents the Prone Couch alluded to at Sect. IX. page 74.

A, Wheel for exercising the muscles on the concave side of the curve.

B, Band for securing the pelvis.

b, Pulley over which the cord D runs.

D, D, Cords which are fastened to the band B.

E, E, Windlass.

Fig. 2 represents the Extension Couch described at Sect. XVII., page 179. In describing the two uprights, the letters C, D, are omitted.

DIRECTIONS TO THE BINDER.

PLATE I.	-	-	-	-	-	<i>to face</i>	Page 9
II.	-	-	-	-	-	—	— 37
III.	-	-	-	-	-	- —	— 139
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V.	-	-	-	-	-	- —	— 169
VI.	-	-	-	-	-	—	— 179

ERRATA.

Page 66, line 4 from bottom, for them read him.

119, line 18, for indispensable read indisputable.

168, line 15, for Plate IV. read Plate V.

